SEQUENCE LISTING

<110> Lambeth, J. David

       Cheng, Guangjie

       McCoy, James

<120> Methods and Transgenic Mouse Model for Identifying and Modulating Factors Involved in the Production of Reactive Oxygen Intermediates

<130> 05501-0211 (43150-286808)

<150> US 60/395,498

<151> 2002-07-12

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<170> PatentIn version 3.1

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atgttccatt cctgaaggac ctctccagaa tccggattgc tgaatcttcc ctgttgccta   180

gaagggctcc aaaccacctc ttgaca atg gga aac tgg gtg gtt aac cac tgg   233
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Phe Ser Val Leu Phe Leu Val Val Trp Leu Gly Leu Asn Val Phe Leu
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ttt gtg gat gcc ttc ctg aaa tat gag aag gcc gac aaa tac tac tac      329
Phe Val Asp Ala Phe Leu Lys Tyr Glu Lys Ala Asp Lys Tyr Tyr Tyr
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aca aga aaa atc ctt ggg tca aca ttg gcc tgt gcc cga gcg tct gct      377
Thr Arg Lys Ile Leu Gly Ser Thr Leu Ala Cys Ala Arg Ala Ser Ala
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ctc tgc ttg aat ttt aac agc acg ctg atc ctg ctt cct gtg tgt cgc      425
Leu Cys Leu Asn Phe Asn Ser Thr Leu Ile Leu Leu Pro Val Cys Arg
                60                  65                  70

aat ctg ctg tcc ttc ctg agg ggc acc tgc tca ttt tgc agc cgc aca      473
Asn Leu Leu Ser Phe Leu Arg Gly Thr Cys Ser Phe Cys Ser Arg Thr
    75                  80                  85

ctg aga aag caa ttg gat cac aac ctc acc ttc cac aag ctg gtg gcc      521
Leu Arg Lys Gln Leu Asp His Asn Leu Thr Phe His Lys Leu Val Ala
90                  95                  100                 105

tat atg atc tgc cta cat aca gct att cac atc att gca cac ctg ttt      569
Tyr Met Ile Cys Leu His Thr Ala Ile His Ile Ile Ala His Leu Phe
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aac ttt gac tgc tat agc aga agc cga cag gcc aca gat ggc tcc ctt      617
Asn Phe Asp Cys Tyr Ser Arg Ser Arg Gln Ala Thr Asp Gly Ser Leu
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gcc tcc att ctc tcc agc cta tct cat gat gag aaa aag ggg ggt tct      665
Ala Ser Ile Leu Ser Ser Leu Ser His Asp Glu Lys Lys Gly Gly Ser
                140                 145                 150

tgg cta aat ccc atc cag tcc cga aac acg aca gtg gag tat gtg aca      713
Trp Leu Asn Pro Ile Gln Ser Arg Asn Thr Thr Val Glu Tyr Val Thr
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ttc acc agc gtt gct ggt ctc act gga gtg atc atg aca ata gcc ttg      761
Phe Thr Ser Val Ala Gly Leu Thr Gly Val Ile Met Thr Ile Ala Leu
170                 175                 180                 185

att ctc atg gta act tca gct act gag ttc atc cgg agg agt tat ttt      809
Ile Leu Met Val Thr Ser Ala Thr Glu Phe Ile Arg Arg Ser Tyr Phe
                190                 195                 200

gaa gtc ttc tgg tat act cac cac ctt ttt atc ttc tat atc ctt ggc      857
Glu Val Phe Trp Tyr Thr His His Leu Phe Ile Phe Tyr Ile Leu Gly
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tta ggg att cac ggc att ggt gga att gtc cgg ggt caa aca gag gag      905
Leu Gly Ile His Gly Ile Gly Gly Ile Val Arg Gly Gln Thr Glu Glu
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agc atg aat gag agt cat cct cgc aag tgt gca gag tct ttt gag atg        953
Ser Met Asn Glu Ser His Pro Arg Lys Cys Ala Glu Ser Phe Glu Met
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tgg gat gat cgt gac tcc cac tgt agg cgc cct aag ttt gaa ggg cat       1001
Trp Asp Asp Arg Asp Ser His Cys Arg Arg Pro Lys Phe Glu Gly His
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ccc cct gag tct tgg aag tgg atc ctt gca ccg gtc att ctt tat atc      1049
Pro Pro Glu Ser Trp Lys Trp Ile Leu Ala Pro Val Ile Leu Tyr Ile
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tgt gaa agg atc ctc cgg ttt tac cgc tcc cag cag aag gtt gtg att      1097
Cys Glu Arg Ile Leu Arg Phe Tyr Arg Ser Gln Gln Lys Val Val Ile
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acc aag gtt gtt atg cac cca tcc aaa gtt ttg gaa ttg cag atg aac      1145
Thr Lys Val Val Met His Pro Ser Lys Val Leu Glu Leu Gln Met Asn
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Lys Arg Gly Phe Ser Met Glu Val Gly Gln Tyr Ile Phe Val Asn Cys
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ccc tca atc tct ctc ctg gaa tgg cat cct ttt act ttg acc tct gct      1241
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cca gag gaa gat ttc ttc tcc att cat atc cga gca gca ggg gac tgg      1289
Pro Glu Glu Asp Phe Phe Ser Ile His Ile Arg Ala Ala Gly Asp Trp
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aca gaa aat ctc ata agg gct ttc gaa caa caa tat tca cca att ccc      1337
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agg att gaa gtg gat ggt ccc ttt ggc aca gcc agt gag gat gtt ttc      1385
Arg Ile Glu Val Asp Gly Pro Phe Gly Thr Ala Ser Glu Asp Val Phe
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Gln Tyr Glu Val Ala Val Leu Val Gly Ala Gly Ile Gly Val Thr Pro
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ttt gct tct atc ttg aaa tcc atc tgg tac aaa ttc cag tgt gca gac      1481
Phe Ala Ser Ile Leu Lys Ser Ile Trp Tyr Lys Phe Gln Cys Ala Asp
410                 415             420                 425


cac aac ctc aaa aca aaa aag atc tat ttc tac tgg atc tgc agg gag      1529
His Asn Leu Lys Thr Lys Lys Ile Tyr Phe Tyr Trp Ile Cys Arg Glu
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aca ggt gcc ttt tcc tgg ttc aac aac ctg ttg act tcc ctg gaa cag      1577
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Glu Met Glu Glu Leu Gly Lys Val Gly Phe Leu Asn Tyr Arg Leu Phe
        460                 465                 470

ctc acc gga tgg gac agc aat att gtt ggt cat gca gca tta aac ttt      1673
Leu Thr Gly Trp Asp Ser Asn Ile Val Gly His Ala Ala Leu Asn Phe
     475                 480                 485

gac aag gcc act gac atc gtg aca ggt ctg aaa cag aaa acc tcc ttt      1721
Asp Lys Ala Thr Asp Ile Val Thr Gly Leu Lys Gln Lys Thr Ser Phe
490                 495                 500                 505

ggg aga cca atg tgg gac aat gag ttt tct aca ata gct acc tcc cac      1769
Gly Arg Pro Met Trp Asp Asn Glu Phe Ser Thr Ile Ala Thr Ser His
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ccc aag tct gta gtg gga gtt ttc tta tgt ggc cct cgg act ttg gca      1817
Pro Lys Ser Val Val Gly Val Phe Leu Cys Gly Pro Arg Thr Leu Ala
             525                 530                 535

aag agc ctg cgc aaa tgc tgt cac cga tat tcc agt ctg gat cct aga      1865
Lys Ser Leu Arg Lys Cys Cys His Arg Tyr Ser Ser Leu Asp Pro Arg
        540                 545                 550

aag gtt caa ttc tac ttc aac aaa gaa aat ttt tga gttataggaa          1911
Lys Val Gln Phe Tyr Phe Asn Lys Glu Asn Phe
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ggacggtaat ctgcattttg tctctttgta tcttcagtaa tttacttggt ctcntcaggt   2031

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aatcttttgt ccctcccacc cccacagaag attttaagta gggtgacttt ttaaataaaa   2391

atttattgaa taattaatga taaaacataa taataaacat aaataataaa caaaattacc   2451

gagaacccca tccccatata acaccaacag tgtacatgtt tactgtcact tttgatatgg   2511

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Tyr Glu Lys Ala Asp Lys Tyr Tyr Tyr Thr Arg Lys Ile Leu Gly Ser
    35   40   45

Thr Leu Ala Cys Ala Arg Ala Ser Ala Leu Cys Leu Asn Phe Asn Ser
    50   55   60

Thr Leu Ile Leu Leu Pro Val Cys Arg Asn Leu Leu Ser Phe Leu Arg
65   70   75   80

Gly Thr Cys Ser Phe Cys Ser Arg Thr Leu Arg Lys Gln Leu Asp His
          85   90   95

Asn Leu Thr Phe His Lys Leu Val Ala Tyr Met Ile Cys Leu His Thr
        100   105   110

Ala Ile His Ile Ile Ala His Leu Phe Asn Phe Asp Cys Tyr Ser Arg
        115   120   125

Ser Arg Gln Ala Thr Asp Gly Ser Leu Ala Ser Ile Leu Ser Ser Leu
    130   135   140

Ser His Asp Glu Lys Lys Gly Gly Ser Trp Leu Asn Pro Ile Gln Ser
145   150   155   160

Arg Asn Thr Thr Val Glu Tyr Val Thr Phe Thr Ser Val Ala Gly Leu
            165   170   175

Thr Gly Val Ile Met Thr Ile Ala Leu Ile Leu Met Val Thr Ser Ala
        180   185   190

Thr Glu Phe Ile Arg Arg Ser Tyr Phe Glu Val Phe Trp Tyr Thr His
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His Leu Phe Ile Phe Tyr Ile Leu Gly Leu Gly Ile His Gly Ile Gly
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Gly Ile Val Arg Gly Gln Thr Glu Glu Ser Met Asn Glu Ser His Pro
225   230   235   240

Arg Lys Cys Ala Glu Ser Phe Glu Met Trp Asp Asp Arg Asp Ser His
        245   250   255

Cys Arg Arg Pro Lys Phe Glu Gly His Pro Pro Glu Ser Trp Lys Trp
     260   265   270

Ile Leu Ala Pro Val Ile Leu Tyr Ile Cys Glu Arg Ile Leu Arg Phe
     275   280   285

Tyr Arg Ser Gln Gln Lys Val Val Ile Thr Lys Val Val Met His Pro
   290   295   300

Ser Lys Val Leu Glu Leu Gln Met Asn Lys Arg Gly Phe Ser Met Glu
305   310   315   320

Val Gly Gln Tyr Ile Phe Val Asn Cys Pro Ser Ile Ser Leu Leu Glu
         325   330   335

Trp His Pro Phe Thr Leu Thr Ser Ala Pro Glu Glu Asp Phe Phe Ser
        340   345   350

Ile His Ile Arg Ala Ala Gly Asp Trp Thr Glu Asn Leu Ile Arg Ala
     355   360   365

Phe Glu Gln Gln Tyr Ser Pro Ile Pro Arg Ile Glu Val Asp Gly Pro
   370   375   380

Phe Gly Thr Ala Ser Glu Asp Val Phe Gln Tyr Glu Val Ala Val Leu
385   390   395   400

Val Gly Ala Gly Ile Gly Val Thr Pro Phe Ala Ser Ile Leu Lys Ser
        405   410   415

Ile Trp Tyr Lys Phe Gln Cys Ala Asp His Asn Leu Lys Thr Lys Lys
     420   425   430

Ile Tyr Phe Tyr Trp Ile Cys Arg Glu Thr Gly Ala Phe Ser Trp Phe
     435   440   445

Asn Asn Leu Leu Thr Ser Leu Glu Gln Glu Met Glu Glu Leu Gly Lys
   450   455   460

Val Gly Phe Leu Asn Tyr Arg Leu Phe Leu Thr Gly Trp Asp Ser Asn
465   470   475   480

Ile Val Gly His Ala Ala Leu Asn Phe Asp Lys Ala Thr Asp Ile Val
                485   490   495

Thr Gly Leu Lys Gln Lys Thr Ser Phe Gly Arg Pro Met Trp Asp Asn
            500   505   510

Glu Phe Ser Thr Ile Ala Thr Ser His Pro Lys Ser Val Val Gly Val
            515   520   525

Phe Leu Cys Gly Pro Arg Thr Leu Ala Lys Ser Leu Arg Lys Cys Cys
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5                    10                  15                  20

gga ata aat ttt tat ctg ttt att gac acg ttc tac tgg tat gaa gag        211
Gly Ile Asn Phe Tyr Leu Phe Ile Asp Thr Phe Tyr Trp Tyr Glu Glu
                 25                  30                  35

gag gag tct ttc cat tac aca cga gtt att ttg ggt tca aca ctg gct        259
Glu Glu Ser Phe His Tyr Thr Arg Val Ile Leu Gly Ser Thr Leu Ala
             40                  45                  50

tgg gca cga gca tcc gca ctg tgc ctg aat ttt aac tgc atg cta att        307
Trp Ala Arg Ala Ser Ala Leu Cys Leu Asn Phe Asn Cys Met Leu Ile
         55                  60                  65

cta ata cct gtc agt cga aac ctt att tca ttc ata aga gga aca agt        355
Leu Ile Pro Val Ser Arg Asn Leu Ile Ser Phe Ile Arg Gly Thr Ser
     70                  75                  80

att tgc tgc aga gga ccg tgg agg agg caa tta gac aaa aac ctc aga        403
Ile Cys Cys Arg Gly Pro Trp Arg Arg Gln Leu Asp Lys Asn Leu Arg
85                  90                  95                  100

ttt cac aaa ctg gtc gcc tat ggg ata gct gtt aat gca acc atc cac        451
Phe His Lys Leu Val Ala Tyr Gly Ile Ala Val Asn Ala Thr Ile His
             105                 110                 115

atc gtg gcg cat ttc ttc aac ctg gaa cgc tac cac tgg agc cag tcc        499
Ile Val Ala His Phe Phe Asn Leu Glu Arg Tyr His Trp Ser Gln Ser
             120                 125                 130

gag gag gcc cag gga ctt ctg gcc gca ctt tcc aag ctg ggc aac acc        547
Glu Glu Ala Gln Gly Leu Leu Ala Ala Leu Ser Lys Leu Gly Asn Thr
         135                 140                 145

cct aac gag agc tac ctc aac cct gtc cgg acc ttc ccc aca aac aca        595
Pro Asn Glu Ser Tyr Leu Asn Pro Val Arg Thr Phe Pro Thr Asn Thr
     150                 155                 160

acc act gaa ttg cta agg aca ata gca ggc gtc acc ggt ctg gtg atc        643
Thr Thr Glu Leu Leu Arg Thr Ile Ala Gly Val Thr Gly Leu Val Ile
165                 170                 175                 180

tct ctg gct tta gtc ttg atc atg acc tcg tca act gag ttc atc aga        691
Ser Leu Ala Leu Val Leu Ile Met Thr Ser Ser Thr Glu Phe Ile Arg
             185                 190                 195

cag gcc tcc tat gag ttg ttc tgg tac aca cac cat gtt ttc atc gtc        739
Gln Ala Ser Tyr Glu Leu Phe Trp Tyr Thr His His Val Phe Ile Val
             200                 205                 210

ttc ttt ctc agc ctg gcc atc cat ggg acg ggt cgg att gtt cga ggc        787
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Phe Phe Leu Ser Leu Ala Ile His Gly Thr Gly Arg Ile Val Arg Gly
        215                 220                 225

caa acc caa gac agt ctc tct ctg cac aac atc acc ttc tgt aga gac        835
Gln Thr Gln Asp Ser Leu Ser Leu His Asn Ile Thr Phe Cys Arg Asp
        230                 235                 240

cgc tat gca gaa tgg cag aca gtg gcc caa tgc ccc gtg cct caa ttt        883
Arg Tyr Ala Glu Trp Gln Thr Val Ala Gln Cys Pro Val Pro Gln Phe
245                 250                 255                 260

tct ggc aag gaa ccc tcg gct tgg aaa tgg att tta ggc cct gtg gtc        931
Ser Gly Lys Glu Pro Ser Ala Trp Lys Trp Ile Leu Gly Pro Val Val
                265                 270                 275

ttg tat gca tgt gaa aga ata att agg ttc tgg cga ttt caa caa gaa        979
Leu Tyr Ala Cys Glu Arg Ile Ile Arg Phe Trp Arg Phe Gln Gln Glu
                280                 285                 290

gtt gtc att acc aag gtg gta agc cac ccc tct gga gtc ctg gaa ctt       1027
Val Val Ile Thr Lys Val Val Ser His Pro Ser Gly Val Leu Glu Leu
                295                 300                 305

cac atg aaa aag cgt ggc ttt aaa atg gcg cca ggg cag tac atc ttg       1075
His Met Lys Lys Arg Gly Phe Lys Met Ala Pro Gly Gln Tyr Ile Leu
        310                 315                 320

gtg cag tgc cca gcc ata tct tcg ctg gag tgg cac ccc ttc acc ctt       1123
Val Gln Cys Pro Ala Ile Ser Ser Leu Glu Trp His Pro Phe Thr Leu
325                 330                 335                 340

acc tct gcc ccc cag gaa gac ttt ttc agc gtg cac atc cgg gca gca       1171
Thr Ser Ala Pro Gln Glu Asp Phe Phe Ser Val His Ile Arg Ala Ala
                345                 350                 355

gga gac tgg aca gca gcg cta ctg gag gcc ttt ggg gca gag gga cag       1219
Gly Asp Trp Thr Ala Ala Leu Leu Glu Ala Phe Gly Ala Glu Gly Gln
                360                 365                 370

gcc ctc cag gag ccc tgg agc ctg cca agg ctg gca gtg gac ggg ccc       1267
Ala Leu Gln Glu Pro Trp Ser Leu Pro Arg Leu Ala Val Asp Gly Pro
        375                 380                 385

ttt gga act gcc ctg aca gat gta ttt cac tac cca gtg tgt gtg tgc       1315
Phe Gly Thr Ala Leu Thr Asp Val Phe His Tyr Pro Val Cys Val Cys
        390                 395                 400

gtt gcc gcg ggg atc gga gtc act ccc ttc gct gct ctt ctg aaa tct       1363
Val Ala Ala Gly Ile Gly Val Thr Pro Phe Ala Ala Leu Leu Lys Ser
405                 410                 415                 420

ata tgg tac aaa tgc agt gag gca cag acc cca ctg aag ctg agc aag       1411
Ile Trp Tyr Lys Cys Ser Glu Ala Gln Thr Pro Leu Lys Leu Ser Lys
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gct gat ctc tta ctc tcc ctg gaa aca cgg atg agt gag cag ggg aaa      1507
Ala Asp Leu Leu Leu Ser Leu Glu Thr Arg Met Ser Glu Gln Gly Lys
            455                 460                 465

act cac ttt ctg agt tat cat ata ttt ctt acc ggc tgg gat gaa aat      1555
Thr His Phe Leu Ser Tyr His Ile Phe Leu Thr Gly Trp Asp Glu Asn
            470                 475                 480

cag gct ctt cac ata gct tta cac tgg gac gaa aat act gac gtg att      1603
Gln Ala Leu His Ile Ala Leu His Trp Asp Glu Asn Thr Asp Val Ile
485                 490                 495                 500

aca ggc tta aag cag aag acc ttc tat ggg agg ccc aac tgg aac aat      1651
Thr Gly Leu Lys Gln Lys Thr Phe Tyr Gly Arg Pro Asn Trp Asn Asn
                505                 510                 515

gag ttc aag cag att gcc tac aat cac ccc agc agc agt att ggc gtg      1699
Glu Phe Lys Gln Ile Ala Tyr Asn His Pro Ser Ser Ser Ile Gly Val
                520                 525                 530

ttc ttc tgt gga cct aaa gct ctc tcg agg aca ctt caa aag atg tgc      1747
Phe Phe Cys Gly Pro Lys Ala Leu Ser Arg Thr Leu Gln Lys Met Cys
            535                 540                 545

cac ttg tat tca tca gct gac ccc aga ggt gtt cat ttc tat tac aac      1795
His Leu Tyr Ser Ser Ala Asp Pro Arg Gly Val His Phe Tyr Tyr Asn
            550                 555                 560

aag gag agc ttc tag actttggagg tcaagtccag gcattgtgtt ttcaatcaag      1850
Lys Glu Ser Phe
565

ttattgattc caaagaactc caccaggaat tcctgtgacg gcctgttgat atgagctccc    1910

agttgggaac tggtgaataa taattaacta ttgtgaacag tacactatac catacttcct    1970

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            20   25   30

Trp Tyr Glu Glu Glu Glu Ser Phe His Tyr Thr Arg Val Ile Leu Gly
        35   40   45

Ser Thr Leu Ala Trp Ala Arg Ala Ser Ala Leu Cys Leu Asn Phe Asn
    50   55   60

Cys Met Leu Ile Leu Ile Pro Val Ser Arg Asn Leu Ile Ser Phe Ile
65   70   75   80

Arg Gly Thr Ser Ile Cys Cys Arg Gly Pro Trp Arg Arg Gln Leu Asp
                85   90   95

Lys Asn Leu Arg Phe His Lys Leu Val Ala Tyr Gly Ile Ala Val Asn
            100   105   110

Ala Thr Ile His Ile Val Ala His Phe Phe Asn Leu Glu Arg Tyr His
        115   120   125

Trp Ser Gln Ser Glu Glu Ala Gln Gly Leu Leu Ala Ala Leu Ser Lys
    130   135   140

Leu Gly Asn Thr Pro Asn Glu Ser Tyr Leu Asn Pro Val Arg Thr Phe
145   150   155   160

Pro Thr Asn Thr Thr Thr Glu Leu Leu Arg Thr Ile Ala Gly Val Thr
                165   170   175

Gly Leu Val Ile Ser Leu Ala Leu Val Leu Ile Met Thr Ser Ser Thr
            180   185   190

Glu Phe Ile Arg Gln Ala Ser Tyr Glu Leu Phe Trp Tyr Thr His His
        195   200   205

Val Phe Ile Val Phe Phe Leu Ser Leu Ala Ile His Gly Thr Gly Arg
   210   215   220

Ile Val Arg Gly Gln Thr Gln Asp Ser Leu Ser Leu His Asn Ile Thr
225   230   235   240

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Gly Pro Val Val Leu Tyr Ala Cys Glu Arg Ile Ile Arg Phe Trp Arg
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   290   295   300

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305   310   315   320

Gln Tyr Ile Leu Val Gln Cys Pro Ala Ile Ser Ser Leu Glu Trp His
         325   330   335

Pro Phe Thr Leu Thr Ser Ala Pro Gln Glu Asp Phe Phe Ser Val His
       340   345   350

Ile Arg Ala Ala Gly Asp Trp Thr Ala Ala Leu Leu Glu Ala Phe Gly
     355   360   365

Ala Glu Gly Gln Ala Leu Gln Glu Pro Trp Ser Leu Pro Arg Leu Ala
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Val Asp Gly Pro Phe Gly Thr Ala Leu Thr Asp Val Phe His Tyr Pro
385   390   395   400

Val Cys Val Cys Val Ala Ala Gly Ile Gly Val Thr Pro Phe Ala Ala
         405   410   415

Leu Leu Lys Ser Ile Trp Tyr Lys Cys Ser Glu Ala Gln Thr Pro Leu
        420   425   430

Lys Leu Ser Lys Val Tyr Phe Tyr Trp Ile Cys Arg Asp Ala Arg Ala
        435   440   445

Phe Glu Trp Phe Ala Asp Leu Leu Leu Ser Leu Glu Thr Arg Met Ser
     450   455   460

Glu Gln Gly Lys Thr His Phe Leu Ser Tyr His Ile Phe Leu Thr Gly
465   470   475   480

Trp Asp Glu Asn Gln Ala Leu His Ile Ala Leu His Trp Asp Glu Asn
                485   490   495

Thr Asp Val Ile Thr Gly Leu Lys Gln Lys Thr Phe Tyr Gly Arg Pro
             500   505   510

Asn Trp Asn Asn Glu Phe Lys Gln Ile Ala Tyr Asn His Pro Ser Ser
        515   520   525

Ser Ile Gly Val Phe Phe Cys Gly Pro Lys Ala Leu Ser Arg Thr Leu
        530   535   540

Gln Lys Met Cys His Leu Tyr Ser Ser Ala Asp Pro Arg Gly Val His
545   550   555   560

Phe Tyr Tyr Asn Lys Glu Ser Phe
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<211> 2044

<212> DNA

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<221> CDS

<222> (104)..(1810)

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gagggagaag aaatttcctg acagccgaag agcaacaagt atc atg atg ggg tgc   115
                                              Met Met Gly Cys
                                              1

tgg att ttg aat gag ggt ctc tcc acc ata tta gta ctc tca tgg ctg   163
Trp Ile Leu Asn Glu Gly Leu Ser Thr Ile Leu Val Leu Ser Trp Leu
5   10   15   20

gga ata aat ttt tat ctg ttt att gac acg ttc tac tgg tat gaa gag   211
Gly Ile Asn Phe Tyr Leu Phe Ile Asp Thr Phe Tyr Trp Tyr Glu Glu
                25   30   35

gag gag tct ttc cat tac aca cga gtt att ttg ggt tca aca ctg gct   259
Glu Glu Ser Phe His Tyr Thr Arg Val Ile Leu Gly Ser Thr Leu Ala
                40   45   50

tgg gca cga gca tcc gca ctg tgc ctg aat ttt aac tgc atg cta att   307
Trp Ala Arg Ala Ser Ala Leu Cys Leu Asn Phe Asn Cys Met Leu Ile
            55   60   65

cta ata cct gtc agt cga aac ctt att tca ttc ata aga gga aca agt   355
Leu Ile Pro Val Ser Arg Asn Leu Ile Ser Phe Ile Arg Gly Thr Ser
    70   75   80

att tgc tgc aga gga ccg tgg agg agg caa tta gac aaa aac ctc aga   403
Ile Cys Cys Arg Gly Pro Trp Arg Arg Gln Leu Asp Lys Asn Leu Arg
85   90   95   100

ttt cac aaa ctg gtc gcc tat ggg ata gct gtt aat gca acc atc cac   451
Phe His Lys Leu Val Ala Tyr Gly Ile Ala Val Asn Ala Thr Ile His
                105   110   115

atc gtg gcg cat ttc ttc aac ctg gaa cgc tac cac tgg agc cag tcc   499
Ile Val Ala His Phe Phe Asn Leu Glu Arg Tyr His Trp Ser Gln Ser
                120   125   130

gag gag gcc cag gga ctt ctg gcc gca ctt tcc aag ctg ggc aac acc   547
Glu Glu Ala Gln Gly Leu Leu Ala Ala Leu Ser Lys Leu Gly Asn Thr
            135   140   145

cct aac gag agc tac ctc aac cct gtc cgg acc ttc ccc aca aac aca   595
Pro Asn Glu Ser Tyr Leu Asn Pro Val Arg Thr Phe Pro Thr Asn Thr
    150   155   160

acc act gaa ttg cta agg aca ata gca ggc gtc acc ggt ctg gtg atc   643

Thr Thr Glu Leu Leu Arg Thr Ile Ala Gly Val Thr Gly Leu Val Ile
165   170   175   180

tct ctg gct tta gtc ttg atc atg acc tcg tca act gag ttc atc aga   691
Ser Leu Ala Leu Val Leu Ile Met Thr Ser Ser Thr Glu Phe Ile Arg
             185   190   195

cag gcc tcc tat gag ttg ttc tgg tac aca cac cat gtt ttc atc gtc   739
Gln Ala Ser Tyr Glu Leu Phe Trp Tyr Thr His His Val Phe Ile Val
             200   205   210

ttc ttt ctc agc ctg gcc atc cat ggg acg ggt cgg att gtt cga ggc   787
Phe Phe Leu Ser Leu Ala Ile His Gly Thr Gly Arg Ile Val Arg Gly
             215   220   225

caa acc caa gac agt ctc tct ctg cac aac atc acc ttc tgt aga gac   835
Gln Thr Gln Asp Ser Leu Ser Leu His Asn Ile Thr Phe Cys Arg Asp
      230   235   240

cgc tat gca gaa tgg cag aca gtg gcc caa tgc ccc gtg cct caa ttt   883
Arg Tyr Ala Glu Trp Gln Thr Val Ala Gln Cys Pro Val Pro Gln Phe
245   250   255   260

tct ggc aag gaa ccc tcg gct tgg aaa tgg att tta ggc cct gtg gtc   931
Ser Gly Lys Glu Pro Ser Ala Trp Lys Trp Ile Leu Gly Pro Val Val
             265   270   275

ttg tat gca tgt gaa aga ata att agg ttc tgg cga ttt caa caa gaa   979
Leu Tyr Ala Cys Glu Arg Ile Ile Arg Phe Trp Arg Phe Gln Gln Glu
             280   285   290

gtt gtc att acc aag gtg gta agc cac ccc tct gga gtc ctg gaa ctt   1027
Val Val Ile Thr Lys Val Val Ser His Pro Ser Gly Val Leu Glu Leu
             295   300   305

cac atg aaa aag cgt ggc ttt aaa atg gcg cca ggg cag tac atc ttg   1075
His Met Lys Lys Arg Gly Phe Lys Met Ala Pro Gly Gln Tyr Ile Leu
    310   315   320

gtg cag tgc cca gcc ata tct tcg ctg gag tgg cac ccc ttc acc ctt   1123
Val Gln Cys Pro Ala Ile Ser Ser Leu Glu Trp His Pro Phe Thr Leu
325   330   335   340

acc tct gcc ccc cag gaa gac ttt ttc agc gtg cac atc cgg gca gca   1171
Thr Ser Ala Pro Gln Glu Asp Phe Phe Ser Val His Ile Arg Ala Ala
             345   350   355

gga gac tgg aca gca gcg cta ctg gag gcc ttt ggg gca gag gga cag   1219
Gly Asp Trp Thr Ala Ala Leu Leu Glu Ala Phe Gly Ala Glu Gly Gln
             360   365   370

gcc ctc cag gag ccc tgg agc ctg cca agg ctg gca gtg gac ggg ccc   1267
Ala Leu Gln Glu Pro Trp Ser Leu Pro Arg Leu Ala Val Asp Gly Pro
             375   380   385

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ttt gga act gcc ctg aca gat gta ttt cac tac cca gtg tgt gtg tgc          1315
Phe Gly Thr Ala Leu Thr Asp Val Phe His Tyr Pro Val Cys Val Cys
    390                     395                 400


gtt gcc gcg ggg atc gga gtc act ccc ttc gct gct ctt ctg aaa tct         1363
Val Ala Ala Gly Ile Gly Val Thr Pro Phe Ala Ala Leu Leu Lys Ser
405                     410                 415                 420


ata tgg tac aaa tgc agt gag gca cag acc cca ctg aag ctg agc aag         1411
Ile Trp Tyr Lys Cys Ser Glu Ala Gln Thr Pro Leu Lys Leu Ser Lys
                425                 430                     435


gtg tat ttc tac tgg att tgc cgg gat gca aga gct ttt gag tgg ttt         1459
Val Tyr Phe Tyr Trp Ile Cys Arg Asp Ala Arg Ala Phe Glu Trp Phe
                440                 445                 450


gct gat ctc tta ctc tcc ctg gaa aca cgg atg agt gag cag ggg aaa        1507
Ala Asp Leu Leu Leu Ser Leu Glu Thr Arg Met Ser Glu Gln Gly Lys
            455                 460                 465


act cac ttt ctg agt tat cat ata ttt ctt acc ggc tgg gat gaa aat        1555
Thr His Phe Leu Ser Tyr His Ile Phe Leu Thr Gly Trp Asp Glu Asn
    470                 475                 480


cag gct ctt cac ata gct tta cac tgg gac gaa aat act gac gtg att        1603
Gln Ala Leu His Ile Ala Leu His Trp Asp Glu Asn Thr Asp Val Ile
485                 490                 495                 500


aca ggc tta aag cag aag acc ttc tat ggg agg ccc aac tgg aac aat        1651
Thr Gly Leu Lys Gln Lys Thr Phe Tyr Gly Arg Pro Asn Trp Asn Asn
                505                 510                 515


gag ttc aag cag att gcc tac aat cac ccc agc agc agt att ggc gtg        1699
Glu Phe Lys Gln Ile Ala Tyr Asn His Pro Ser Ser Ser Ile Gly Val
            520                 525                 530


ttc ttc tgt gga cct aaa gct ctc tcg agg aca ctt caa aag atg tgc        1747
Phe Phe Cys Gly Pro Lys Ala Leu Ser Arg Thr Leu Gln Lys Met Cys
        535                 540                 545


cac ttg tat tca tca gct gac ccc aga ggt gtt cat ttc tat tac aac        1795
His Leu Tyr Ser Ser Ala Asp Pro Arg Gly Val His Phe Tyr Tyr Asn
    550                 555                 560


aag gag agc ttc tag actttggagg tcaagtccag gcattgtgtt ttcaatcaag        1850
Lys Glu Ser Phe
565


ttattgattc caaagaactc caccaggaat tcctgtgacg gcctgttgat atgagctccc        1910


agttgggaac tggtgaataa taattaacta ttgtgaacag tacactatac catacttcct        1970


tagcttataa ataacatgtc atatacaaca gaacaaaaac atttactgaa attaaaatat        2030
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<212> PRT

<213> Homo sapiens

<400> 6

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            20   25   30

Trp Tyr Glu Glu Glu Glu Ser Phe His Tyr Thr Arg Val Ile Leu Gly
        35   40   45

Ser Thr Leu Ala Trp Ala Arg Ala Ser Ala Leu Cys Leu Asn Phe Asn
    50   55   60

Cys Met Leu Ile Leu Ile Pro Val Ser Arg Asn Leu Ile Ser Phe Ile
65   70   75   80

Arg Gly Thr Ser Ile Cys Cys Arg Gly Pro Trp Arg Arg Gln Leu Asp
                85   90   95

Lys Asn Leu Arg Phe His Lys Leu Val Ala Tyr Gly Ile Ala Val Asn
            100   105   110

Ala Thr Ile His Ile Val Ala His Phe Phe Asn Leu Glu Arg Tyr His
        115   120   125

Trp Ser Gln Ser Glu Glu Ala Gln Gly Leu Leu Ala Ala Leu Ser Lys
    130   135   140

Leu Gly Asn Thr Pro Asn Glu Ser Tyr Leu Asn Pro Val Arg Thr Phe
145   150   155   160

Pro Thr Asn Thr Thr Thr Glu Leu Leu Arg Thr Ile Ala Gly Val Thr
            165   170   175

Gly Leu Val Ile Ser Leu Ala Leu Val Leu Ile Met Thr Ser Ser Thr
            180   185   190

Glu Phe Ile Arg Gln Ala Ser Tyr Glu Leu Phe Trp Tyr Thr His His
        195   200   205

Val Phe Ile Val Phe Phe Leu Ser Leu Ala Ile His Gly Thr Gly Arg
    210   215   220

Ile Val Arg Gly Gln Thr Gln Asp Ser Leu Ser Leu His Asn Ile Thr
225   230   235   240

Phe Cys Arg Asp Arg Tyr Ala Glu Trp Gln Thr Val Ala Gln Cys Pro
                245   250   255

Val Pro Gln Phe Ser Gly Lys Glu Pro Ser Ala Trp Lys Trp Ile Leu
            260   265   270

Gly Pro Val Val Leu Tyr Ala Cys Glu Arg Ile Ile Arg Phe Trp Arg
        275   280   285

Phe Gln Gln Glu Val Val Ile Thr Lys Val Val Ser His Pro Ser Gly
    290   295   300

Val Leu Glu Leu His Met Lys Lys Arg Gly Phe Lys Met Ala Pro Gly
305   310   315   320

Gln Tyr Ile Leu Val Gln Cys Pro Ala Ile Ser Ser Leu Glu Trp His
            325   330   335

Pro Phe Thr Leu Thr Ser Ala Pro Gln Glu Asp Phe Phe Ser Val His
            340   345   350

Ile Arg Ala Ala Gly Asp Trp Thr Ala Ala Leu Leu Glu Ala Phe Gly
        355   360   365

Ala Glu Gly Gln Ala Leu Gln Glu Pro Trp Ser Leu Pro Arg Leu Ala
    370   375   380

Val Asp Gly Pro Phe Gly Thr Ala Leu Thr Asp Val Phe His Tyr Pro
385   390   395   400

Val Cys Val Cys Val Ala Ala Gly Ile Gly Val Thr Pro Phe Ala Ala
            405   410   415

Leu Leu Lys Ser Ile Trp Tyr Lys Cys Ser Glu Ala Gln Thr Pro Leu
        420   425   430

Lys Leu Ser Lys Val Tyr Phe Tyr Trp Ile Cys Arg Asp Ala Arg Ala
        435   440   445

Phe Glu Trp Phe Ala Asp Leu Leu Leu Ser Leu Glu Thr Arg Met Ser
    450   455   460

Glu Gln Gly Lys Thr His Phe Leu Ser Tyr His Ile Phe Leu Thr Gly
465   470   475   480

Trp Asp Glu Asn Gln Ala Leu His Ile Ala Leu His Trp Asp Glu Asn
            485   490   495

Thr Asp Val Ile Thr Gly Leu Lys Gln Lys Thr Phe Tyr Gly Arg Pro
            500   505   510

Asn Trp Asn Asn Glu Phe Lys Gln Ile Ala Tyr Asn His Pro Ser Ser
        515   520   525

Ser Ile Gly Val Phe Phe Cys Gly Pro Lys Ala Leu Ser Arg Thr Leu
    530   535   540

Gln Lys Met Cys His Leu Tyr Ser Ser Ala Asp Pro Arg Gly Val His
545   550   555   560

Phe Tyr Tyr Asn Lys Glu Ser Phe
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<222> (87)..(1823)

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gagcgcagcg cggcggggcc ggcggc atg gct gtg tcc tgg agg agc tgg ctc       113
                              Met Ala Val Ser Trp Arg Ser Trp Leu
                               1               5

gcc aac gaa ggg gtt aaa cac ctc tgc ctg ttc atc tgg ctc tcc atg        161
Ala Asn Glu Gly Val Lys His Leu Cys Leu Phe Ile Trp Leu Ser Met
10              15                  20                  25

aat gtc ctg ctt ttc tgg aaa acc ttc ttg ctg tat aac caa ggg cca        209
Asn Val Leu Leu Phe Trp Lys Thr Phe Leu Leu Tyr Asn Gln Gly Pro
                30                  35                  40

gag tat cac tac ctc cac cag atg ttg ggg cta gga ttg tgt cta agc        257
Glu Tyr His Tyr Leu His Gln Met Leu Gly Leu Gly Leu Cys Leu Ser
                45                  50                  55

aga gcc tca gca tct gtt ctt aac ctc aac tgc agc ctt atc ctt tta        305
Arg Ala Ser Ala Ser Val Leu Asn Leu Asn Cys Ser Leu Ile Leu Leu
        60                  65                  70

ccc atg tgc cga aca ctc ttg gct tac ctc cga gga tca cag aag gtt        353
Pro Met Cys Arg Thr Leu Leu Ala Tyr Leu Arg Gly Ser Gln Lys Val
    75                  80                  85

cca agc agg aga acc agg aga ttg ttg gat aaa agc aga aca ttc cat        401
Pro Ser Arg Arg Thr Arg Arg Leu Leu Asp Lys Ser Arg Thr Phe His
90                  95                  100                 105

att acc tgt ggt gtt act atc tgt att ttc tca ggc gtg cat gtg gct        449
Ile Thr Cys Gly Val Thr Ile Cys Ile Phe Ser Gly Val His Val Ala
                110                 115                 120

gcc cat ctg gtg aat gcc ctc aac ttc tca gtg aat tac agt gaa gac        497
Ala His Leu Val Asn Ala Leu Asn Phe Ser Val Asn Tyr Ser Glu Asp
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Ala His Leu Val Asn Ala Leu Asn Phe Ser Val Asn Tyr Ser Glu Asp
     125   130   135

ttt gtt gaa ctg aat gca gca aga tac cga gat gag gat cct aga aaa   545
Phe Val Glu Leu Asn Ala Ala Arg Tyr Arg Asp Glu Asp Pro Arg Lys
     140   145   150

ctt ctc ttc aca act gtt cct ggc ctg aca ggg gtc tgc atg gtg gtg   593
Leu Leu Phe Thr Thr Val Pro Gly Leu Thr Gly Val Cys Met Val Val
     155   160   165

gtg cta ttc ctc atg atc aca gcc tct aca tat gca ata aga gtt tct   641
Val Leu Phe Leu Met Ile Thr Ala Ser Thr Tyr Ala Ile Arg Val Ser
170   175   180   185

aac tat gat atc ttc tgg tat act cat aac ctc ttc ttt gtc ttc tac   689
Asn Tyr Asp Ile Phe Trp Tyr Thr His Asn Leu Phe Phe Val Phe Tyr
          190   195   200

atg ctg ctg acg ttg cat gtt tca gga ggg ctg ctg aag tat caa act   737
Met Leu Leu Thr Leu His Val Ser Gly Gly Leu Leu Lys Tyr Gln Thr
          205   210   215

aat tta gat acc cac cct ccc ggc tgc atc agt ctt aac cga acc agc   785
Asn Leu Asp Thr His Pro Pro Gly Cys Ile Ser Leu Asn Arg Thr Ser
       220   225   230

tct cag aat att tcc tta cca gag tat ttc tca gaa cat ttt cat gaa   833
Ser Gln Asn Ile Ser Leu Pro Glu Tyr Phe Ser Glu His Phe His Glu
      235   240   245

cct ttc cct gaa gga ttt tca aaa ccg gca gag ttt acc cag cac aaa   881
Pro Phe Pro Glu Gly Phe Ser Lys Pro Ala Glu Phe Thr Gln His Lys
250   255   260   265

ttt gtg aag att tgt atg gaa gag ccc aga ttc caa gct aat ttt cca   929
Phe Val Lys Ile Cys Met Glu Glu Pro Arg Phe Gln Ala Asn Phe Pro
          270   275   280

cag act tgg ctt tgg att tct gga cct ttg tgc ctg tac tgt gcc gaa   977
Gln Thr Trp Leu Trp Ile Ser Gly Pro Leu Cys Leu Tyr Cys Ala Glu
          285   290   295

aga ctt tac agg tat atc cgg agc aat aag cca gtc acc atc att tcg   1025
Arg Leu Tyr Arg Tyr Ile Arg Ser Asn Lys Pro Val Thr Ile Ile Ser
          300   305   310

gtc ata agt cat ccc tca gat gtc atg gaa atc cga atg gtc aaa gaa   1073
Val Ile Ser His Pro Ser Asp Val Met Glu Ile Arg Met Val Lys Glu
       315   320   325

aat ttt aaa gca aga cct ggt cag tat att act cta cat tgt ccc agt   1121
Asn Phe Lys Ala Arg Pro Gly Gln Tyr Ile Thr Leu His Cys Pro Ser
330   335   340   345

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gta tct gca tta gaa aat cat cca ttt acc ctc aca atg tgt cca act        1169
Val Ser Ala Leu Glu Asn His Pro Phe Thr Leu Thr Met Cys Pro Thr
            350                     355                 360


gaa acc aaa gca aca ttt ggg gtt cat ctt aaa ata gta gga gac tgg        1217
Glu Thr Lys Ala Thr Phe Gly Val His Leu Lys Ile Val Gly Asp Trp
            365                     370                 375


aca gaa cga ttt cga gat tta cta ctg cct cca tct agt caa gac tcc        1265
Thr Glu Arg Phe Arg Asp Leu Leu Leu Pro Pro Ser Ser Gln Asp Ser
            380                     385                 390


gaa att ctg ccc ttc att caa tct aga aat tat ccc aag ctg tat att       1313
Glu Ile Leu Pro Phe Ile Gln Ser Arg Asn Tyr Pro Lys Leu Tyr Ile
        395                     400                 405


gat ggt cct ttt gga agt cca ttt gag gaa tca ctg aac tat gag gtc       1361
Asp Gly Pro Phe Gly Ser Pro Phe Glu Glu Ser Leu Asn Tyr Glu Val
410                     415                 420                 425


agc ctc tgc gtg gct gga ggc att gga gta act cca ttt gca tca ata       1409
Ser Leu Cys Val Ala Gly Gly Ile Gly Val Thr Pro Phe Ala Ser Ile
                430                     435                 440


ctc aac acc ctg ttg gat gac tgg aaa cca tac aag ctt aga aga cta       1457
Leu Asn Thr Leu Leu Asp Asp Trp Lys Pro Tyr Lys Leu Arg Arg Leu
            445                     450                 455


tac ttt att tgg gta tgc aga gat atc cag tcc ttc cgt tgg ttt gca       1505
Tyr Phe Ile Trp Val Cys Arg Asp Ile Gln Ser Phe Arg Trp Phe Ala
            460                     465                 470


gat tta ctc tgt atg ttg cat aac aag ttt tgg caa gag aac aga cct       1553
Asp Leu Leu Cys Met Leu His Asn Lys Phe Trp Gln Glu Asn Arg Pro
        475                     480                 485


gac tat gtc aac atc cag ctg tac ctc agt caa aca gat ggg ata cag       1601
Asp Tyr Val Asn Ile Gln Leu Tyr Leu Ser Gln Thr Asp Gly Ile Gln
490                     495                 500                 505


aag ata att gga gaa aaa tat cat gca ctg aat tca aga ctg ttt ata       1649
Lys Ile Ile Gly Glu Lys Tyr His Ala Leu Asn Ser Arg Leu Phe Ile
                510                     515                 520


gga cgt cct cgg tgg aaa ctt ttg ttt gat gaa ata gca aaa tat aac       1697
Gly Arg Pro Arg Trp Lys Leu Leu Phe Asp Glu Ile Ala Lys Tyr Asn
            525                     530                 535


aga gga aaa aca gtt ggt gtt ttc tgt tgt gga ccc aat tca cta tcc       1745
Arg Gly Lys Thr Val Gly Val Phe Cys Cys Gly Pro Asn Ser Leu Ser
            540                     545                 550


aag act ctt cat aaa ctg agt aac cag aac aac tca tat ggg aca aga       1793
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Lys Thr Leu His Lys Leu Ser Asn Gln Asn Asn Ser Tyr Gly Thr Arg
    555   560   565

ttt gaa tac aat aaa gag tct ttc agc tga aaacttttgc catgaagcag   1843
Phe Glu Tyr Asn Lys Glu Ser Phe Ser
570   575

gactctaaag aaggaatgag tgcaatttct aagactttga aactcagcgg aatcaatcag   1903

ctgtgttatg ccaaagaata gtaaggtttt cttatttatg attatttgaa aatggaaatg   1963

tgagaatgtg gcaacatgac cgtcacatta catgtttaat ctggaaacca aagagaccct   2023

gaagaatatt tgatgtgatg attcattttc agttctcaaa ttaaaagaaa actgttagat   2083

gcacactgtt gattttcatg gtggattcaa gaactcccta gtgaggagct gaacttgctc   2143

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<212> PRT

<213> Homo sapiens

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          20   25   30

Thr Phe Leu Leu Tyr Asn Gln Gly Pro Glu Tyr His Tyr Leu His Gln
          35   40   45

Met Leu Gly Leu Gly Leu Cys Leu Ser Arg Ala Ser Ala Ser Val Leu
          50   55   60

Asn Leu Asn Cys Ser Leu Ile Leu Leu Pro Met Cys Arg Thr Leu Leu
65   70   75   80

Ala Tyr Leu Arg Gly Ser Gln Lys Val Pro Ser Arg Arg Thr Arg Arg
                85   90   95

Leu Leu Asp Lys Ser Arg Thr Phe His Ile Thr Cys Gly Val Thr Ile
            100   105   110

Cys Ile Phe Ser Gly Val His Val Ala Ala His Leu Val Asn Ala Leu
            115   120   125

Asn Phe Ser Val Asn Tyr Ser Glu Asp Phe Val Glu Leu Asn Ala Ala
        130   135   140

Arg Tyr Arg Asp Glu Asp Pro Arg Lys Leu Leu Phe Thr Thr Val Pro
145   150   155   160

Gly Leu Thr Gly Val Cys Met Val Val Val Leu Phe Leu Met Ile Thr
                165   170   175

Ala Ser Thr Tyr Ala Ile Arg Val Ser Asn Tyr Asp Ile Phe Trp Tyr
            180   185   190

Thr His Asn Leu Phe Phe Val Phe Tyr Met Leu Leu Thr Leu His Val
        195   200   205

Ser Gly Gly Leu Leu Lys Tyr Gln Thr Asn Leu Asp Thr His Pro Pro
    210   215   220

Gly Cys Ile Ser Leu Asn Arg Thr Ser Ser Gln Asn Ile Ser Leu Pro
225   230   235   240

Glu Tyr Phe Ser Glu His Phe His Glu Pro Phe Pro Glu Gly Phe Ser
            245   250   255

Lys Pro Ala Glu Phe Thr Gln His Lys Phe Val Lys Ile Cys Met Glu
            260   265   270

Glu Pro Arg Phe Gln Ala Asn Phe Pro Gln Thr Trp Leu Trp Ile Ser
        275   280   285

Gly Pro Leu Cys Leu Tyr Cys Ala Glu Arg Leu Tyr Arg Tyr Ile Arg
    290   295   300

Ser Asn Lys Pro Val Thr Ile Ile Ser Val Ile Ser His Pro Ser Asp
305   310   315   320

Val Met Glu Ile Arg Met Val Lys Glu Asn Phe Lys Ala Arg Pro Gly
                325   330   335

Gln Tyr Ile Thr Leu His Cys Pro Ser Val Ser Ala Leu Glu Asn His
                340   345   350

Pro Phe Thr Leu Thr Met Cys Pro Thr Glu Thr Lys Ala Thr Phe Gly
        355   360   365

Val His Leu Lys Ile Val Gly Asp Trp Thr Glu Arg Phe Arg Asp Leu
        370   375   380

Leu Leu Pro Pro Ser Ser Gln Asp Ser Glu Ile Leu Pro Phe Ile Gln
385   390   395   400

Ser Arg Asn Tyr Pro Lys Leu Tyr Ile Asp Gly Pro Phe Gly Ser Pro
                405   410   415

Phe Glu Glu Ser Leu Asn Tyr Glu Val Ser Leu Cys Val Ala Gly Gly
                420   425   430

Ile Gly Val Thr Pro Phe Ala Ser Ile Leu Asn Thr Leu Leu Asp Asp
        435   440   445

Trp Lys Pro Tyr Lys Leu Arg Arg Leu Tyr Phe Ile Trp Val Cys Arg
        450   455   460

Asp Ile Gln Ser Phe Arg Trp Phe Ala Asp Leu Leu Cys Met Leu His
465   470   475   480

Asn Lys Phe Trp Gln Glu Asn Arg Pro Asp Tyr Val Asn Ile Gln Leu
                485   490   495

Tyr Leu Ser Gln Thr Asp Gly Ile Gln Lys Ile Ile Gly Glu Lys Tyr
        500   505   510

His Ala Leu Asn Ser Arg Leu Phe Ile Gly Arg Pro Arg Trp Lys Leu
    515   520   525

Leu Phe Asp Glu Ile Ala Lys Tyr Asn Arg Gly Lys Thr Val Gly Val
   530   535   540

Phe Cys Cys Gly Pro Asn Ser Leu Ser Lys Thr Leu His Lys Leu Ser
545   550   555   560

Asn Gln Asn Asn Ser Tyr Gly Thr Arg Phe Glu Tyr Asn Lys Glu Ser
       565   570   575

Phe Ser

<210> 9

<211> 2223

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (73)..(1770)

<223>

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               Met Glu Asn Leu Thr Ile Ser Thr Ala His Trp Leu Thr
               1   5   10

gcc ccc gcc ccc cgc cca cgc ccg cgc cgg ccg cgc cag ctg acc cgc   159
Ala Pro Ala Pro Arg Pro Arg Pro Arg Arg Pro Arg Gln Leu Thr Arg
   15   20   25

gcc tac tgg cac aac cac cgc agc cag ctg ttc tgc ctg gcc acc tat   207
Ala Tyr Trp His Asn His Arg Ser Gln Leu Phe Cys Leu Ala Thr Tyr
 30   35   40   45

gca ggc ctc cac gtg ctg ctc ttc ggg ctg gcg gcc agc gcg cac cgg   255
Ala Gly Leu His Val Leu Leu Phe Gly Leu Ala Ala Ser Ala His Arg
                 50   55   60

gac ctc ggc gcc agc gtc atg gtg gcc aag ggc tgt ggc cag tgc ctc   303
Asp Leu Gly Ala Ser Val Met Val Ala Lys Gly Cys Gly Gln Cys Leu
                 65   70   75

aac ttc gac tgc agc ttc atc gcg gtg ctg atg ctc aga cgc tgc ctc   351
Asn Phe Asp Cys Ser Phe Ile Ala Val Leu Met Leu Arg Arg Cys Leu
                 80   85   90

acc tgg ctg cgg gcc acg tgg ctg gct caa gtc cta cca ctg gac cag   399
Thr Trp Leu Arg Ala Thr Trp Leu Ala Gln Val Leu Pro Leu Asp Gln
         95   100   105

aac atc cag ttc cac cag ctt atg ggc tac gtg gta gtg ggg ctg tcc   447
Asn Ile Gln Phe His Gln Leu Met Gly Tyr Val Val Val Gly Leu Ser
110   115   120   125

ctc gtg cac act gtg gct cac act gtg aac ttt gta ctc cag gct cag   495
Leu Val His Thr Val Ala His Thr Val Asn Phe Val Leu Gln Ala Gln
                 130   135   140

gcg gag gcc agc cct ttc cag ttc tgg gag ctg ctc ctc acc acg agg   543
Ala Glu Ala Ser Pro Phe Gln Phe Trp Glu Leu Leu Leu Thr Thr Arg
                 145   150   155

cct ggc att ggc tgg gta cac ggt tcg gcc tcc ccg aca ggt gtc gct   591
Pro Gly Ile Gly Trp Val His Gly Ser Ala Ser Pro Thr Gly Val Ala
         160   165   170

ctg ctg ctg ctg ctc ctc ctc atg ttc atc tgc tcc agt tcc tgc atc   639
Leu Leu Leu Leu Leu Leu Leu Met Phe Ile Cys Ser Ser Ser Cys Ile
         175   180   185

cgc agg agt ggc cac ttt gag gtg ttc tat tgg act cac ctg tcc tac   687
Arg Arg Ser Gly His Phe Glu Val Phe Tyr Trp Thr His Leu Ser Tyr
190   195   200   205

ctc ctc gtg tgg ctt ctg ctc atc ttt cat ggg ccc aac ttc tgg aag   735
Leu Leu Val Trp Leu Leu Leu Ile Phe His Gly Pro Asn Phe Trp Lys
                 210   215   220

tgg ctg ctg gtg cct gga atc ttg ttt ttc ctg gag aag gcc atc gga   783
Trp Leu Leu Val Pro Gly Ile Leu Phe Phe Leu Glu Lys Ala Ile Gly
                 225   230   235

ctg gca gtg tcc cgc atg gca gcc gtg tgc atc atg gaa gtc aac ctc   831
Leu Ala Val Ser Arg Met Ala Ala Val Cys Ile Met Glu Val Asn Leu
         240   245   250

ctc ccc tcc aag gtc act cat ctc ctc atc aag cgg ccc cct ttt ttt   879

```
Leu Pro Ser Lys Val Thr His Leu Leu Ile Lys Arg Pro Pro Phe Phe
    255                 260                 265

cac tat aga cct ggt gac tac ttg tat ctg aac atc ccc acc att gct        927
His Tyr Arg Pro Gly Asp Tyr Leu Tyr Leu Asn Ile Pro Thr Ile Ala
270                 275                 280                 285

cgc tat gag tgg cac ccc ttc acc atc agc agt gct cct gag cag aaa        975
Arg Tyr Glu Trp His Pro Phe Thr Ile Ser Ser Ala Pro Glu Gln Lys
                290                 295                 300

gac act atc tgg ctg cac att cgg tcc caa ggc cag tgg aca aac agg       1023
Asp Thr Ile Trp Leu His Ile Arg Ser Gln Gly Gln Trp Thr Asn Arg
                305                 310                 315

ctg tat gag tcc ttc aag gca tca gac cca ctg ggc cgt ggt tct aag       1071
Leu Tyr Glu Ser Phe Lys Ala Ser Asp Pro Leu Gly Arg Gly Ser Lys
        320                 325                 330

agg ctg tcg agg agt gtg aca atg aga aag agt caa agg tcg tcc aag       1119
Arg Leu Ser Arg Ser Val Thr Met Arg Lys Ser Gln Arg Ser Ser Lys
        335                 340                 345

ggc tct gag ata ctt ttg gag aaa cac aaa ttc tgt aac atc aag tgc       1167
Gly Ser Glu Ile Leu Leu Glu Lys His Lys Phe Cys Asn Ile Lys Cys
350                 355                 360                 365

tac atc gat ggg cct tat ggg acc ccc acc cgc agg atc ttt gcc tct       1215
Tyr Ile Asp Gly Pro Tyr Gly Thr Pro Thr Arg Arg Ile Phe Ala Ser
                370                 375                 380

gag cat gcc gtg ctc atc ggg gca ggc atc ggc atc acc ccc ttt gct       1263
Glu His Ala Val Leu Ile Gly Ala Gly Ile Gly Ile Thr Pro Phe Ala
                385                 390                 395

tcc att ctg cag agt atc atg tac agg cac cag aaa aga aag cat act       1311
Ser Ile Leu Gln Ser Ile Met Tyr Arg His Gln Lys Arg Lys His Thr
        400                 405                 410

tgc ccc agc tgc cag cac tcc tgg atc gaa ggt gtc caa gac aac atg       1359
Cys Pro Ser Cys Gln His Ser Trp Ile Glu Gly Val Gln Asp Asn Met
    415                 420                 425

aag ctc cat aag gtg gac ttt atc tgg atc aac aga gac cag cgg tct       1407
Lys Leu His Lys Val Asp Phe Ile Trp Ile Asn Arg Asp Gln Arg Ser
430                 435                 440                 445

ttc gag tgg ttt gtg agc ctg ctg act aaa ctg gag atg gac cag gcc       1455
Phe Glu Trp Phe Val Ser Leu Leu Thr Lys Leu Glu Met Asp Gln Ala
                450                 455                 460

gag gag gct caa tac ggc cgc ttc ctg gag ctg cat atg tac atg aca       1503
Glu Glu Ala Gln Tyr Gly Arg Phe Leu Glu Leu His Met Tyr Met Thr
            465                 470                 475
```

```
tct gca ctg ggc aag aat gac atg aag gcc att ggc ctg cag atg gcc    1551
Ser Ala Leu Gly Lys Asn Asp Met Lys Ala Ile Gly Leu Gln Met Ala
        480                     485                 490

ctt gac ctc ctg gcc aac aag gag aag aaa gac tcc atc acg ggg ctg    1599
Leu Asp Leu Leu Ala Asn Lys Glu Lys Lys Asp Ser Ile Thr Gly Leu
        495                     500                 505

cag acg cgc acc cag cct ggg cgg cct gac tgg agc aag gtg ttc cag    1647
Gln Thr Arg Thr Gln Pro Gly Arg Pro Asp Trp Ser Lys Val Phe Gln
510                     515                 520                 525

aaa gtg gct gct gag aag aag ggc aag gtg cag gtc ttc ttc tgt ggc    1695
Lys Val Ala Ala Glu Lys Lys Gly Lys Val Gln Val Phe Phe Cys Gly
                530                     535                 540

tcc cca gct ctg gcc aag gtg ctg aag ggc cat tgt gag aag ttc ggc    1743
Ser Pro Ala Leu Ala Lys Val Leu Lys Gly His Cys Glu Lys Phe Gly
            545                     550                 555

ttc aga ttt ttc caa gag aat ttc tag cctcacctct ccaagctctg         1790
Phe Arg Phe Phe Gln Glu Asn Phe
        560                     565

ccccaagtcc acaccatggg tctgcttcat cgcattagta taaatgcccc cacagggacc   1850

agcctcagat gacccaccca ataagacaaa gcctagggac ccctaatcc tgctcaacag     1910

agagaacagg agaccccaag gggcagatga acttcctcta gaacccaggg gaagggcag     1970

tgccttgttc agtctgctgt agattctggg gtttctgtga aagtgaggga accagaggct    2030

ggtcacggga gcttgggggt ggggttcgag ggggcagagg gcaaccactc ctccaaacat    2090

tttccgacgg agccttcccc cacatccatg gtcccaaacc tgcccaatca tcacagtcat    2150

ttggaagctt atttctccgg catcttataa aattgttcaa acctacagta aaaaaaaaa     2210

aaaaaaaaaa aaa                                                      2223


<210>  10

<211>  565

<212>  PRT

<213>  Homo sapiens


<400>  10
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Met Glu Asn Leu Thr Ile Ser Thr Ala His Trp Leu Thr Ala Pro Ala
1   5   10   15

Pro Arg Pro Arg Pro Arg Arg Pro Arg Gln Leu Thr Arg Ala Tyr Trp
            20   25   30

His Asn His Arg Ser Gln Leu Phe Cys Leu Ala Thr Tyr Ala Gly Leu
            35   40   45

His Val Leu Leu Phe Gly Leu Ala Ala Ser Ala His Arg Asp Leu Gly
        50   55   60

Ala Ser Val Met Val Ala Lys Gly Cys Gly Gln Cys Leu Asn Phe Asp
65   70   75   80

Cys Ser Phe Ile Ala Val Leu Met Leu Arg Arg Cys Leu Thr Trp Leu
                85   90   95

Arg Ala Thr Trp Leu Ala Gln Val Leu Pro Leu Asp Gln Asn Ile Gln
            100   105   110

Phe His Gln Leu Met Gly Tyr Val Val Val Gly Leu Ser Leu Val His
            115   120   125

Thr Val Ala His Thr Val Asn Phe Val Leu Gln Ala Gln Ala Glu Ala
        130   135   140

Ser Pro Phe Gln Phe Trp Glu Leu Leu Leu Thr Thr Arg Pro Gly Ile
145   150   155   160

Gly Trp Val His Gly Ser Ala Ser Pro Thr Gly Val Ala Leu Leu Leu
                165   170   175

Leu Leu Leu Leu Met Phe Ile Cys Ser Ser Ser Cys Ile Arg Arg Ser
            180   185   190

Gly His Phe Glu Val Phe Tyr Trp Thr His Leu Ser Tyr Leu Leu Val
        195   200   205

Trp Leu Leu Leu Ile Phe His Gly Pro Asn Phe Trp Lys Trp Leu Leu
    210   215   220

Val Pro Gly Ile Leu Phe Phe Leu Glu Lys Ala Ile Gly Leu Ala Val
225   230   235   240

Ser Arg Met Ala Ala Val Cys Ile Met Glu Val Asn Leu Leu Pro Ser
                245   250   255

Lys Val Thr His Leu Leu Ile Lys Arg Pro Pro Phe Phe His Tyr Arg
                260   265   270

Pro Gly Asp Tyr Leu Tyr Leu Asn Ile Pro Thr Ile Ala Arg Tyr Glu
                275   280   285

Trp His Pro Phe Thr Ile Ser Ser Ala Pro Glu Gln Lys Asp Thr Ile
        290   295   300

Trp Leu His Ile Arg Ser Gln Gly Gln Trp Thr Asn Arg Leu Tyr Glu
305   310   315   320

Ser Phe Lys Ala Ser Asp Pro Leu Gly Arg Gly Ser Lys Arg Leu Ser
                325   330   335

Arg Ser Val Thr Met Arg Lys Ser Gln Arg Ser Ser Lys Gly Ser Glu
                340   345   350

Ile Leu Leu Glu Lys His Lys Phe Cys Asn Ile Lys Cys Tyr Ile Asp
        355   360   365

Gly Pro Tyr Gly Thr Pro Thr Arg Arg Ile Phe Ala Ser Glu His Ala
        370   375   380

Val Leu Ile Gly Ala Gly Ile Gly Ile Thr Pro Phe Ala Ser Ile Leu
385   390   395   400

Gln Ser Ile Met Tyr Arg His Gln Lys Arg Lys His Thr Cys Pro Ser
                405   410   415

Cys Gln His Ser Trp Ile Glu Gly Val Gln Asp Asn Met Lys Leu His
                420   425   430

Lys Val Asp Phe Ile Trp Ile Asn Arg Asp Gln Arg Ser Phe Glu Trp
     435   440   445

Phe Val Ser Leu Leu Thr Lys Leu Glu Met Asp Gln Ala Glu Glu Ala
     450   455   460

Gln Tyr Gly Arg Phe Leu Glu Leu His Met Tyr Met Thr Ser Ala Leu
465   470   475   480

Gly Lys Asn Asp Met Lys Ala Ile Gly Leu Gln Met Ala Leu Asp Leu
          485   490   495

Leu Ala Asn Lys Glu Lys Lys Asp Ser Ile Thr Gly Leu Gln Thr Arg
          500   505   510

Thr Gln Pro Gly Arg Pro Asp Trp Ser Lys Val Phe Gln Lys Val Ala
          515   520   525

Ala Glu Lys Lys Gly Lys Val Gln Val Phe Phe Cys Gly Ser Pro Ala
     530   535   540

Leu Ala Lys Val Leu Lys Gly His Cys Glu Lys Phe Gly Phe Arg Phe
545   550   555   560

Phe Gln Glu Asn Phe
               565

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<212> DNA

<213> Homo sapiens

<220>

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gcagagctgc agaggcaccg gacgagagag ggctccgcgg gcccagctgg cagccaggcc        60

ggagacaagt tgcagtcccg ggctctggtg acgccgtggc cgcagctgga agaggaaaac       120

aaggatcaga ttggagaagt gatttatcta agatcccaca gtggactggc agcagcactg       180

agacctcagc ctagtctcct gatccccaag cagggccctg cctaaggaac acactctgca       240

gagtgctggg ccaaagcagg gttttccaac taatcttaga aggtaaagtc catgaagggt       300

ctccattttg ggacattcta atccctgagc ccctattatt ttcatc atg ggc ttc         355
                                                   Met Gly Phe
                                                    1
```

```
tgc ctg gct cta gca tgg aca ctt ctg gtt ggg gca tgg acc cct ctg        403
Cys Leu Ala Leu Ala Trp Thr Leu Leu Val Gly Ala Trp Thr Pro Leu
    5                   10                  15
```

```
gga gct cag aac ccc att tcg tgg gag gtg cag cga ttt gat ggg tgg        451
Gly Ala Gln Asn Pro Ile Ser Trp Glu Val Gln Arg Phe Asp Gly Trp
20              25                  30                  35
```

```
tac aac aac ctc atg gag cac aga tgg ggc agc aaa ggc tcc cgg ctg        499
Tyr Asn Asn Leu Met Glu His Arg Trp Gly Ser Lys Gly Ser Arg Leu
                40                  45                  50
```

```
cag cgc ctg gtc cca gcc agc tat gca gat ggc gtg tac cag ccc ttg        547
Gln Arg Leu Val Pro Ala Ser Tyr Ala Asp Gly Val Tyr Gln Pro Leu
            55                  60                  65
```

```
gga gaa ccc cac ctg ccc aac ccc cga gac ctt agc aac acc atc tca        595
Gly Glu Pro His Leu Pro Asn Pro Arg Asp Leu Ser Asn Thr Ile Ser
            70                  75                  80
```

```
agg ggc cct gca ggg ctg gcc tcc ctg aga aac cgc aca gtg ttg ggg        643
Arg Gly Pro Ala Gly Leu Ala Ser Leu Arg Asn Arg Thr Val Leu Gly
    85                  90                  95
```

```
gtc ttc ttt ggc tat cac gtg ctt tca gac ctg gtg agc gtg gaa act        691
Val Phe Phe Gly Tyr His Val Leu Ser Asp Leu Val Ser Val Glu Thr
100                 105                 110                 115
```

```
ccc ggc tgc ccc gcc gag ttc ctc aac att cgc atc ccg ccc gga gac        739
Pro Gly Cys Pro Ala Glu Phe Leu Asn Ile Arg Ile Pro Pro Gly Asp
                120                 125                 130
```

```
ccc atg ttc gac ccc gac cag cgc ggg gac gtg gtg ctg ccc ttc cag        787
Pro Met Phe Asp Pro Asp Gln Arg Gly Asp Val Val Leu Pro Phe Gln
                135                 140                 145
```

```
aga agc cgc tgg gac ccc gag acc gga cgg agt ccc agc aat ccc cgg        835
Arg Ser Arg Trp Asp Pro Glu Thr Gly Arg Ser Pro Ser Asn Pro Arg
```

```
Arg Ser Arg Trp Asp Pro Glu Thr Gly Arg Ser Pro Ser Asn Pro Arg
        150                     155                 160
```

```
gac ccg gcc aac cag gtg acg ggc tgg ctg gac ggc agc gcc atc tat        883
Asp Pro Ala Asn Gln Val Thr Gly Trp Leu Asp Gly Ser Ala Ile Tyr
    165                     170                 175
```

```
ggt tcc tcg cat tcc tgg agc gac gcg ctg cgg agc ttc tcc agg gga        931
Gly Ser Ser His Ser Trp Ser Asp Ala Leu Arg Ser Phe Ser Arg Gly
180                     185                 190                 195
```

```
cag ctg gcg tcg ggg ccc gac ccc gct ttt ccc cga gac tcg cag aac        979
Gln Leu Ala Ser Gly Pro Asp Pro Ala Phe Pro Arg Asp Ser Gln Asn
                200                     205                 210
```

```
ccc ctg ctc atg tgg gcg gcg ccc gac ccc gcc acc ggg cag aac ggg       1027
Pro Leu Leu Met Trp Ala Ala Pro Asp Pro Ala Thr Gly Gln Asn Gly
                215                     220                 225
```

```
ccc cgg ggg ctg tac gcc ttc ggg gca gag aga ggg aac cgg gaa ccc       1075
Pro Arg Gly Leu Tyr Ala Phe Gly Ala Glu Arg Gly Asn Arg Glu Pro
                230                     235                 240
```

```
ttc ctg cag gcg ctg ggc ctg ctc tgg ttc cgc tac cac aac ctg tgg       1123
Phe Leu Gln Ala Leu Gly Leu Leu Trp Phe Arg Tyr His Asn Leu Trp
        245                     250                 255
```

```
gcg cag agg ctg gcc cgc cag cac cca gac tgg gag gac gag gag ctg       1171
Ala Gln Arg Leu Ala Arg Gln His Pro Asp Trp Glu Asp Glu Glu Leu
260                     265                 270                 275
```

```
ttc cag cac gca cgc aag agg gtc atc gcc acc tac cag aac atc gct       1219
Phe Gln His Ala Arg Lys Arg Val Ile Ala Thr Tyr Gln Asn Ile Ala
                280                     285                 290
```

```
gtg tat gag tgg ctg ccc agc ttc ctg cag aaa aca ctc ccg gag tat       1267
Val Tyr Glu Trp Leu Pro Ser Phe Leu Gln Lys Thr Leu Pro Glu Tyr
                295                     300                 305
```

```
aca gga tac cgg cca ttt ctg gac ccc agc atc tcc tca gag ttc gtg       1315
Thr Gly Tyr Arg Pro Phe Leu Asp Pro Ser Ile Ser Ser Glu Phe Val
                310                     315                 320
```

```
gcg gcc tct gag cag ttc ctg tcc acc atg gtg ccc cct ggc gtc tac       1363
Ala Ala Ser Glu Gln Phe Leu Ser Thr Met Val Pro Pro Gly Val Tyr
    325                     330                 335
```

```
atg aga aat gcc agc tgc cac ttc cag ggg gtc atc aat cgg aac tca       1411
Met Arg Asn Ala Ser Cys His Phe Gln Gly Val Ile Asn Arg Asn Ser
340                     345                 350                 355
```

```
agt gtc tcc aga gct ctc cgg gtc tgc aac agc tac tgg agc cgt gag       1459
Ser Val Ser Arg Ala Leu Arg Val Cys Asn Ser Tyr Trp Ser Arg Glu
                360                     365                 370
```

```
cac cca agc cta caa agt gct gaa gat gtg gat gca ctg ctg ctg ggc      1507
His Pro Ser Leu Gln Ser Ala Glu Asp Val Asp Ala Leu Leu Leu Gly
            375                 380                 385

atg gcc tcc cag atc gca gag cga gag gac cat gtg ttg gtt gaa gat      1555
Met Ala Ser Gln Ile Ala Glu Arg Glu Asp His Val Leu Val Glu Asp
            390                 395                 400

gtg cgg gat ttc tgg cct ggg cca ctg aag ttt tcc cgc aca gac cac      1603
Val Arg Asp Phe Trp Pro Gly Pro Leu Lys Phe Ser Arg Thr Asp His
    405                 410                 415

ctg gcc agc tgc ctg cag cgg ggc cgg gat ctg ggc ctg ccc tct tac      1651
Leu Ala Ser Cys Leu Gln Arg Gly Arg Asp Leu Gly Leu Pro Ser Tyr
420                 425                 430                 435

acc aag gcc agg gca gca ctg ggc ttg tct ccc att acc cgc tgg cag      1699
Thr Lys Ala Arg Ala Ala Leu Gly Leu Ser Pro Ile Thr Arg Trp Gln
                440                 445                 450

gac atc aac cct gca ctc tcc cgg agc aat gac act gta ctg gag gcc      1747
Asp Ile Asn Pro Ala Leu Ser Arg Ser Asn Asp Thr Val Leu Glu Ala
                455                 460                 465

aca gct gcc ctg tac aac cag gac tta tcc tgg cta gag ctg ctc cct      1795
Thr Ala Ala Leu Tyr Asn Gln Asp Leu Ser Trp Leu Glu Leu Leu Pro
            470                 475                 480

ggg gga ctc ctg gag agc cac cgg gac cct gga cct ctg ttc agc acc      1843
Gly Gly Leu Leu Glu Ser His Arg Asp Pro Gly Pro Leu Phe Ser Thr
        485                 490                 495

atc gtc ctt gaa caa ttt gtg cgg cta cgg gat ggt gac cgc tac tgg      1891
Ile Val Leu Glu Gln Phe Val Arg Leu Arg Asp Gly Asp Arg Tyr Trp
500                 505                 510                 515

ttt gag aac acc agg aat ggg ctg ttc tcc aag aag gag att gaa gaa      1939
Phe Glu Asn Thr Arg Asn Gly Leu Phe Ser Lys Lys Glu Ile Glu Glu
                520                 525                 530

atc cga aat acc acc ctg cag gac gtg ctg gtc gct gtt atc aac att      1987
Ile Arg Asn Thr Thr Leu Gln Asp Val Leu Val Ala Val Ile Asn Ile
                535                 540                 545

gac ccc agt gct ctg cag ccc aat gtc ttt gtc tgg cat aaa gga gac      2035
Asp Pro Ser Ala Leu Gln Pro Asn Val Phe Val Trp His Lys Gly Asp
            550                 555                 560

ccc tgt ccg cag ccg aga cag ctc agc act gaa ggc ctg cca gcg tgt      2083
Pro Cys Pro Gln Pro Arg Gln Leu Ser Thr Glu Gly Leu Pro Ala Cys
        565                 570                 575

gct ccc tct gtt gtt cgt gac tat ttt gag ggc agt gga ttt ggc ttc      2131
```

```
Ala Pro Ser Val Val Arg Asp Tyr Phe Glu Gly Ser Gly Phe Gly Phe
580                 585                 590                 595


ggg gtc acc atc ggg acc ctc tgt tgc ttc cct ttg gtg agc ctg ctc        2179
Gly Val Thr Ile Gly Thr Leu Cys Cys Phe Pro Leu Val Ser Leu Leu
                600                 605                 610


agt gcc tgg att gtt gcc cgg ctc cgg atg aga aat ttc aag agg ctc        2227
Ser Ala Trp Ile Val Ala Arg Leu Arg Met Arg Asn Phe Lys Arg Leu
                615                 620                 625


cag ggc cag gac cgc cag agc atc gtg tct gag aag ctc gtg gga ggc        2275
Gln Gly Gln Asp Arg Gln Ser Ile Val Ser Glu Lys Leu Val Gly Gly
            630                 635                 640


atg gaa gct ttg gaa tgg caa ggc cac aag gag ccc tgc cgg ccc gtg        2323
Met Glu Ala Leu Glu Trp Gln Gly His Lys Glu Pro Cys Arg Pro Val
    645                 650                 655


ctt gtg tac ctg cag ccc ggg cag atc cgt gtg gta gat ggc agg ctc        2371
Leu Val Tyr Leu Gln Pro Gly Gln Ile Arg Val Val Asp Gly Arg Leu
660                 665                 670                 675


acc gtg ctc cgc acc atc cag ctg cag cct cca cag aag gtc aac ttc        2419
Thr Val Leu Arg Thr Ile Gln Leu Gln Pro Pro Gln Lys Val Asn Phe
                680                 685                 690


gtc ctg tcc agc aac cgt gga cgc cgc act ctg ctg ctc aag atc ccc        2467
Val Leu Ser Ser Asn Arg Gly Arg Arg Thr Leu Leu Leu Lys Ile Pro
                695                 700                 705


aag gag tat gac ctg gtg ctg ctg ttt aac ttg gag gaa gag cgg cag        2515
Lys Glu Tyr Asp Leu Val Leu Leu Phe Asn Leu Glu Glu Glu Arg Gln
            710                 715                 720


gcg ctg gtg gaa aat ctc cgg gga gct ctg aag gag agc ggg ttg agc        2563
Ala Leu Val Glu Asn Leu Arg Gly Ala Leu Lys Glu Ser Gly Leu Ser
    725                 730                 735


atc cag gag tgg gag ctg cgg gag cag gag ctg atg aga gca gct gtg        2611
Ile Gln Glu Trp Glu Leu Arg Glu Gln Glu Leu Met Arg Ala Ala Val
740                 745                 750                 755


aca cgg gag cag cgg agg cac ctc ctg gag acc ttt ttc agg cac ctt        2659
Thr Arg Glu Gln Arg Arg His Leu Leu Glu Thr Phe Phe Arg His Leu
                760                 765                 770


ttc tcc cag gtg ctg gac atc aac cag gcc gac gca ggg acc ctg ccc        2707
Phe Ser Gln Val Leu Asp Ile Asn Gln Ala Asp Ala Gly Thr Leu Pro
                775                 780                 785


ctg gac tcc tcc cag aag gtg cgg gag gcc ctg acc tgt gag ctg agc        2755
Leu Asp Ser Ser Gln Lys Val Arg Glu Ala Leu Thr Cys Glu Leu Ser
            790                 795                 800
```

```
agg gcc gag ttt gcc gag tcc ctg ggc ctc aag ccc cag gac atg ttt          2803
Arg Ala Glu Phe Ala Glu Ser Leu Gly Leu Lys Pro Gln Asp Met Phe
    805                     810                 815

gtg gag tcc atg ttc tct ctg gct gac aag gat ggc aat ggc tac ctg          2851
Val Glu Ser Met Phe Ser Leu Ala Asp Lys Asp Gly Asn Gly Tyr Leu
820                     825                 830                 835

tcc ttc cga gag ttc ctg gac atc ctg gtg gtc ttc atg aaa ggc tct          2899
Ser Phe Arg Glu Phe Leu Asp Ile Leu Val Val Phe Met Lys Gly Ser
                840                 845                 850

cct gag gaa aag tct cgc ctt atg ttc cgc atg tac gac ttt gat ggg          2947
Pro Glu Glu Lys Ser Arg Leu Met Phe Arg Met Tyr Asp Phe Asp Gly
                855                 860                 865

aat ggc ctc att tcc aag gat gag ttc atc agg atg ctg aga tcc ttc          2995
Asn Gly Leu Ile Ser Lys Asp Glu Phe Ile Arg Met Leu Arg Ser Phe
            870                 875                 880

atc gag atc tcc aac aac tgc ctg tcc aag gcc cag ctg gct gag gtg          3043
Ile Glu Ile Ser Asn Asn Cys Leu Ser Lys Ala Gln Leu Ala Glu Val
    885                 890                 895

gtg gag tcc atg ttc cgg gag tcg gga ttc cag gac aag gag gaa ctg          3091
Val Glu Ser Met Phe Arg Glu Ser Gly Phe Gln Asp Lys Glu Glu Leu
900                 905                 910                 915

aca tgg gaa gat ttt cac ttc atg ctg cgg gac cac aat agc gag ctc          3139
Thr Trp Glu Asp Phe His Phe Met Leu Arg Asp His Asn Ser Glu Leu
                920                 925                 930

cgc ttc acg cag ctc tgt gtc aaa ggg gtg gag gtg cct gaa gtc atc          3187
Arg Phe Thr Gln Leu Cys Val Lys Gly Val Glu Val Pro Glu Val Ile
                935                 940                 945

aag gac ctc tgc cgg cga gcc tcc tac atc agc cag gat atg atc tgt          3235
Lys Asp Leu Cys Arg Arg Ala Ser Tyr Ile Ser Gln Asp Met Ile Cys
            950                 955                 960

ccc tct ccc aga gtg agt gcc cgc tgt tcc cgc agc gac att gag act          3283
Pro Ser Pro Arg Val Ser Ala Arg Cys Ser Arg Ser Asp Ile Glu Thr
    965                 970                 975

gag ttg aca cct cag aga ctg cag tgc ccc atg gac aca gac cct ccc          3331
Glu Leu Thr Pro Gln Arg Leu Gln Cys Pro Met Asp Thr Asp Pro Pro
980                 985                 990                 995

cag gag att cgg cgg  agg ttt ggc aag aag  gta acg tca ttc cag           3376
Gln Glu Ile Arg Arg  Arg Phe Gly Lys Lys  Val Thr Ser Phe Gln
                1000             1005           1010

ccc ttg ctg ttc act  gag gcg cac cga gag  aag ttc caa cgc agc           3421
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Pro Leu Leu Phe Thr  Glu Ala His Arg Glu  Lys Phe Gln Arg Ser
              1015                   1020                   1025

tgt ctc cac cag acg  gtg caa cag ttc aag  cgc ttc att gag aac         3466
Cys Leu His Gln Thr  Val Gln Gln Phe Lys  Arg Phe Ile Glu Asn
              1030                   1035                   1040

tac cgg cgc cac atc  ggc tgc gtg gcc gtg  ttc tac gcc atc gct         3511
Tyr Arg Arg His Ile  Gly Cys Val Ala Val  Phe Tyr Ala Ile Ala
              1045                   1050                   1055

ggg ggg ctt ttc ctg  gag agg gcc tac tac  tac gcc ttt gcc gca         3556
Gly Gly Leu Phe Leu  Glu Arg Ala Tyr Tyr  Tyr Ala Phe Ala Ala
              1060                   1065                   1070

cat cac acg ggc atc  aca gac acc acc cgc  gtg gga atc atc ctg         3601
His His Thr Gly Ile  Thr Asp Thr Thr Arg  Val Gly Ile Ile Leu
              1075                   1080                   1085

tcg cgg ggc aca gca  gcc agc atc tct ttc  atg ttc tcc tac atc         3646
Ser Arg Gly Thr Ala  Ala Ser Ile Ser Phe  Met Phe Ser Tyr Ile
              1090                   1095                   1100

ttg ctc acc atg tgc  cgc aac ctc atc acc  ttc ctg cga gaa acc         3691
Leu Leu Thr Met Cys  Arg Asn Leu Ile Thr  Phe Leu Arg Glu Thr
              1105                   1110                   1115

ttc ctc aac cgc tac  gtg ccc ttc gac gcc  gcc gtg gac ttc cat         3736
Phe Leu Asn Arg Tyr  Val Pro Phe Asp Ala  Ala Val Asp Phe His
              1120                   1125                   1130

cgc ctc att gcc tcc  acc gcc atc gtc ctc  aca gtc tta cac agt         3781
Arg Leu Ile Ala Ser  Thr Ala Ile Val Leu  Thr Val Leu His Ser
              1135                   1140                   1145

gtg ggc cat gtg gtg  aat gtg tac ctg ttc  tcc atc agc ccc ctc         3826
Val Gly His Val Val  Asn Val Tyr Leu Phe  Ser Ile Ser Pro Leu
              1150                   1155                   1160

agc gtc ctc tct tgc  ctc ttt cct ggc ctc  ttc cat gat gat ggg         3871
Ser Val Leu Ser Cys  Leu Phe Pro Gly Leu  Phe His Asp Asp Gly
              1165                   1170                   1175

tct gag ctc ccc cag  aag tat tac tgg tgg  ttc ttc cag acc gta         3916
Ser Glu Leu Pro Gln  Lys Tyr Tyr Trp Trp  Phe Phe Gln Thr Val
              1180                   1185                   1190

cca ggc ctc acg ggg  gtt gtg ctg ctc ctg  atc ctg gcc atc atg         3961
Pro Gly Leu Thr Gly  Val Val Leu Leu Leu  Ile Leu Ala Ile Met
              1195                   1200                   1205

tat gtc ttt gcc tcc  cac cac ttc cgc cgc  cgc agt ttc cgg ggc         4006
Tyr Val Phe Ala Ser  His His Phe Arg Arg  Arg Ser Phe Arg Gly
              1210                   1215                   1220
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ttc tgg ctg acc cac   cac ctc tac atc ctg   ctc tat gtc ctg ctc              4051
Phe Trp Leu Thr His   His Leu Tyr Ile Leu   Leu Tyr Val Leu Leu
                1225                   1230                   1235

atc atc cat ggt agc   ttt gcc ctg atc cag   ctg ccc cgt ttc cac              4096
Ile Ile His Gly Ser   Phe Ala Leu Ile Gln   Leu Pro Arg Phe His
                1240                   1245                   1250

atc ttc ttc ctg gtc   cca gca atc atc tat   ggg ggc gac aag ctg              4141
Ile Phe Phe Leu Val   Pro Ala Ile Ile Tyr   Gly Gly Asp Lys Leu
                1255                   1260                   1265

gtg agc ctg agc cgg   aag aag gtg gag atc   agc gtg gtg aag gcg              4186
Val Ser Leu Ser Arg   Lys Lys Val Glu Ile   Ser Val Val Lys Ala
                1270                   1275                   1280

gag ctg ctg ccc tca   gga gtg acc cac ctg   cgg ttc cag cgg ccc              4231
Glu Leu Leu Pro Ser   Gly Val Thr His Leu   Arg Phe Gln Arg Pro
                1285                   1290                   1295

cag ggc ttt gag tac   aag tca ggg cag tgg   gtg cgg atc gct tgc              4276
Gln Gly Phe Glu Tyr   Lys Ser Gly Gln Trp   Val Arg Ile Ala Cys
                1300                   1305                   1310

ctg gct ctg ggg acc   acc gag tac cac ccc   ttc aca ctg acc tct              4321
Leu Ala Leu Gly Thr   Thr Glu Tyr His Pro   Phe Thr Leu Thr Ser
                1315                   1320                   1325

gcg ccc cat gag gac   acg ctt agc ctg cac   atc cgg gca gca ggg              4366
Ala Pro His Glu Asp   Thr Leu Ser Leu His   Ile Arg Ala Ala Gly
                1330                   1335                   1340

ccc tgg acc act cgc   ctc agg gag atc tac   tca gcc ccg acg ggt              4411
Pro Trp Thr Thr Arg   Leu Arg Glu Ile Tyr   Ser Ala Pro Thr Gly
                1345                   1350                   1355

gac aga tgt gcc aga   tac cca aag ctg tac   ctt gat gga cca ttt              4456
Asp Arg Cys Ala Arg   Tyr Pro Lys Leu Tyr   Leu Asp Gly Pro Phe
                1360                   1365                   1370

gga gag ggc cac cag   gag tgg cat aag ttt   gag gtg tca gtg tta              4501
Gly Glu Gly His Gln   Glu Trp His Lys Phe   Glu Val Ser Val Leu
                1375                   1380                   1385

gtg gga ggg ggc att   ggg gtc acc cct ttt   gcc tcc atc ctc aaa              4546
Val Gly Gly Gly Ile   Gly Val Thr Pro Phe   Ala Ser Ile Leu Lys
                1390                   1395                   1400

gac ctg gtc ttc aag   tca tcc gtc agc tgc   caa gtg ttc tgt aag              4591
Asp Leu Val Phe Lys   Ser Ser Val Ser Cys   Gln Val Phe Cys Lys
                1405                   1410                   1415

aag atc tac ttc atc   tgg gtg acg cgg acc   cag cgt cag ttt gag              4636
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Lys Ile Tyr Phe Ile  Trp Val Thr Arg Thr  Gln Arg Gln Phe Glu
              1420                1425                    1430


tgg ctg gct gac atc  atc cga gag gtg gag  gag aat gac cac cag        4681
Trp Leu Ala Asp Ile  Ile Arg Glu Val Glu  Glu Asn Asp His Gln
              1435                1440                    1445


gac ctg gtg tct gtg  cac atc tac atc acc  cag ctg gct gag aag        4726
Asp Leu Val Ser Val  His Ile Tyr Ile Thr  Gln Leu Ala Glu Lys
              1450                1455                    1460


ttc gac ctc agg acc  act atg ctg tac atc  tgt gag cgg cac ttc        4771
Phe Asp Leu Arg Thr  Thr Met Leu Tyr Ile  Cys Glu Arg His Phe
              1465                1470                    1475


cag aag gtt ctg aac  cgg agt cta ttc aca  ggc ctg cgc tcc atc        4816
Gln Lys Val Leu Asn  Arg Ser Leu Phe Thr  Gly Leu Arg Ser Ile
              1480                1485                    1490


acc cac ttt ggc cgt  ccc ccc ttt gag ccc  ttc ttc aac tcc ctg        4861
Thr His Phe Gly Arg  Pro Pro Phe Glu Pro  Phe Phe Asn Ser Leu
              1495                1500                    1505


cag gag gtc cac ccc  cag gtc cgg aag atc  ggg gtg ttt agc tgt        4906
Gln Glu Val His Pro  Gln Val Arg Lys Ile  Gly Val Phe Ser Cys
              1510                1515                    1520


ggc ccc cct ggc atg  acc aag aat gtg gaa  aag gcc tgt cag ctc        4951
Gly Pro Pro Gly Met  Thr Lys Asn Val Glu  Lys Ala Cys Gln Leu
              1525                1530                    1535


atc aac agg cag gac  cgg act cac ttc tcc  cac cat tat gag aac        4996
Ile Asn Arg Gln Asp  Arg Thr His Phe Ser  His His Tyr Glu Asn
              1540                1545                    1550


ttc tag gcccctgccc gggggttctg cccactgccc agttgagcag aggtttgagc       5052
Phe


ccacacctca cctctgttct tcctatttct ggctgcctca gccttctctg atttcccacc    5112

tcccaacctt gttccaggtg gccatagtca gtcaccatgt gtgggctcag ggaccccag     5172

gaccaggatg tgtctcagcc tggagaaatg gtggggggc agtgtctagg gactagagtg     5232

agaagtaggg gagctactga tttggggcaa agtgaaacct ctgcttccag acttcagaaa    5292

caaatctcag aagacaagct gacctgacaa gtactatgtg tgtgcatgtc tgtatgtgtg    5352

ttggggcggt gagtgtaagg atgcagtggg agcatggatg ctggcatctt agaaccctcc    5412

ctactcccat acctcctcct cttctgggct ccccactgtc agacgggctg gcaaatgcct    5472

tgcaggaggt agaggctgga cccatggcaa gccatttaca gaaacccact cggcacccca    5532
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gtctaacacc acaactaatt tcacccaagg ttttaagcac gttctttcat cagaccctgg   5592

cccaatacct atgtatgcaa tgctcctcag ccctcttctc cctgctccag tagtctccct   5652

tccaaataaa tcacttttct gccttaaaaa aaaaaaaaaa a   5693

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Met Gly Phe Cys Leu Ala Leu Ala Trp Thr Leu Leu Val Gly Ala Trp
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Thr Pro Leu Gly Ala Gln Asn Pro Ile Ser Trp Glu Val Gln Arg Phe
            20   25   30

Asp Gly Trp Tyr Asn Asn Leu Met Glu His Arg Trp Gly Ser Lys Gly
        35   40   45

Ser Arg Leu Gln Arg Leu Val Pro Ala Ser Tyr Ala Asp Gly Val Tyr
    50   55   60

Gln Pro Leu Gly Glu Pro His Leu Pro Asn Pro Arg Asp Leu Ser Asn
65   70   75   80

Thr Ile Ser Arg Gly Pro Ala Gly Leu Ala Ser Leu Arg Asn Arg Thr
                85   90   95

Val Leu Gly Val Phe Phe Gly Tyr His Val Leu Ser Asp Leu Val Ser
            100   105   110

Val Glu Thr Pro Gly Cys Pro Ala Glu Phe Leu Asn Ile Arg Ile Pro
        115   120   125

Pro Gly Asp Pro Met Phe Asp Pro Asp Gln Arg Gly Asp Val Val Leu
    130   135   140

Pro Phe Gln Arg Ser Arg Trp Asp Pro Glu Thr Gly Arg Ser Pro Ser
145   150   155   160

Asn Pro Arg Asp Pro Ala Asn Gln Val Thr Gly Trp Leu Asp Gly Ser
                    165   170   175

Ala Ile Tyr Gly Ser Ser His Ser Trp Ser Asp Ala Leu Arg Ser Phe
                180   185   190

Ser Arg Gly Gln Leu Ala Ser Gly Pro Asp Pro Ala Phe Pro Arg Asp
            195   200   205

Ser Gln Asn Pro Leu Leu Met Trp Ala Ala Pro Asp Pro Ala Thr Gly
        210   215   220

Gln Asn Gly Pro Arg Gly Leu Tyr Ala Phe Gly Ala Glu Arg Gly Asn
225   230   235   240

Arg Glu Pro Phe Leu Gln Ala Leu Gly Leu Leu Trp Phe Arg Tyr His
                245   250   255

Asn Leu Trp Ala Gln Arg Leu Ala Arg Gln His Pro Asp Trp Glu Asp
                260   265   270

Glu Glu Leu Phe Gln His Ala Arg Lys Arg Val Ile Ala Thr Tyr Gln
        275   280   285

Asn Ile Ala Val Tyr Glu Trp Leu Pro Ser Phe Leu Gln Lys Thr Leu
    290   295   300

Pro Glu Tyr Thr Gly Tyr Arg Pro Phe Leu Asp Pro Ser Ile Ser Ser
305   310   315   320

Glu Phe Val Ala Ala Ser Glu Gln Phe Leu Ser Thr Met Val Pro Pro
                325   330   335

Gly Val Tyr Met Arg Asn Ala Ser Cys His Phe Gln Gly Val Ile Asn
                340   345   350

Arg Asn Ser Ser Val Ser Arg Ala Leu Arg Val Cys Asn Ser Tyr Trp
     355   360   365

Ser Arg Glu His Pro Ser Leu Gln Ser Ala Glu Asp Val Asp Ala Leu
    370   375   380

Leu Leu Gly Met Ala Ser Gln Ile Ala Glu Arg Glu Asp His Val Leu
385   390   395   400

Val Glu Asp Val Arg Asp Phe Trp Pro Gly Pro Leu Lys Phe Ser Arg
           405   410   415

Thr Asp His Leu Ala Ser Cys Leu Gln Arg Gly Arg Asp Leu Gly Leu
        420   425   430

Pro Ser Tyr Thr Lys Ala Arg Ala Ala Leu Gly Leu Ser Pro Ile Thr
      435   440   445

Arg Trp Gln Asp Ile Asn Pro Ala Leu Ser Arg Ser Asn Asp Thr Val
   450   455   460

Leu Glu Ala Thr Ala Ala Leu Tyr Asn Gln Asp Leu Ser Trp Leu Glu
465   470   475   480

Leu Leu Pro Gly Gly Leu Leu Glu Ser His Arg Asp Pro Gly Pro Leu
        485   490   495

Phe Ser Thr Ile Val Leu Glu Gln Phe Val Arg Leu Arg Asp Gly Asp
        500   505   510

Arg Tyr Trp Phe Glu Asn Thr Arg Asn Gly Leu Phe Ser Lys Lys Glu
     515   520   525

Ile Glu Glu Ile Arg Asn Thr Thr Leu Gln Asp Val Leu Val Ala Val
    530   535   540

Ile Asn Ile Asp Pro Ser Ala Leu Gln Pro Asn Val Phe Val Trp His
545   550   555   560

Lys Gly Asp Pro Cys Pro Gln Pro Arg Gln Leu Ser Thr Glu Gly Leu
        565   570   575

Pro Ala Cys Ala Pro Ser Val Val Arg Asp Tyr Phe Glu Gly Ser Gly
       580   585   590

Phe Gly Phe Gly Val Thr Ile Gly Thr Leu Cys Cys Phe Pro Leu Val
    595   600   605

Ser Leu Leu Ser Ala Trp Ile Val Ala Arg Leu Arg Met Arg Asn Phe
    610   615   620

Lys Arg Leu Gln Gly Gln Asp Arg Gln Ser Ile Val Ser Glu Lys Leu
625   630   635   640

Val Gly Gly Met Glu Ala Leu Glu Trp Gln Gly His Lys Glu Pro Cys
        645   650   655

Arg Pro Val Leu Val Tyr Leu Gln Pro Gly Gln Ile Arg Val Val Asp
      660   665   670

Gly Arg Leu Thr Val Leu Arg Thr Ile Gln Leu Gln Pro Pro Gln Lys
    675   680   685

Val Asn Phe Val Leu Ser Ser Asn Arg Gly Arg Arg Thr Leu Leu Leu
   690   695   700

Lys Ile Pro Lys Glu Tyr Asp Leu Val Leu Leu Phe Asn Leu Glu Glu
705   710   715   720

Glu Arg Gln Ala Leu Val Glu Asn Leu Arg Gly Ala Leu Lys Glu Ser
      725   730   735

Gly Leu Ser Ile Gln Glu Trp Glu Leu Arg Glu Gln Glu Leu Met Arg
      740   745   750

Ala Ala Val Thr Arg Glu Gln Arg Arg His Leu Leu Glu Thr Phe Phe
   755   760   765

Arg His Leu Phe Ser Gln Val Leu Asp Ile Asn Gln Ala Asp Ala Gly
   770   775   780

Thr Leu Pro Leu Asp Ser Ser Gln Lys Val Arg Glu Ala Leu Thr Cys
785   790   795   800

Glu Leu Ser Arg Ala Glu Phe Ala Glu Ser Leu Gly Leu Lys Pro Gln
                    805   810   815

Asp Met Phe Val Glu Ser Met Phe Ser Leu Ala Asp Lys Asp Gly Asn
                820   825   830

Gly Tyr Leu Ser Phe Arg Glu Phe Leu Asp Ile Leu Val Val Phe Met
            835   840   845

Lys Gly Ser Pro Glu Glu Lys Ser Arg Leu Met Phe Arg Met Tyr Asp
    850   855   860

Phe Asp Gly Asn Gly Leu Ile Ser Lys Asp Glu Phe Ile Arg Met Leu
865   870   875   880

Arg Ser Phe Ile Glu Ile Ser Asn Asn Cys Leu Ser Lys Ala Gln Leu
                885   890   895

Ala Glu Val Val Glu Ser Met Phe Arg Glu Ser Gly Phe Gln Asp Lys
            900   905   910

Glu Glu Leu Thr Trp Glu Asp Phe His Phe Met Leu Arg Asp His Asn
        915   920   925

Ser Glu Leu Arg Phe Thr Gln Leu Cys Val Lys Gly Val Glu Val Pro
    930   935   940

Glu Val Ile Lys Asp Leu Cys Arg Arg Ala Ser Tyr Ile Ser Gln Asp
945   950   955   960

Met Ile Cys Pro Ser Pro Arg Val Ser Ala Arg Cys Ser Arg Ser Asp
                965   970   975

Ile Glu Thr Glu Leu Thr Pro Gln Arg Leu Gln Cys Pro Met Asp Thr
            980   985   990

Asp Pro Pro Gln Glu Ile Arg Arg Arg Phe Gly Lys Lys Val Thr Ser
        995   1000   1005

Phe Gln Pro Leu Leu Phe Thr Glu Ala His Arg Glu Lys Phe Gln
    1010   1015   1020

Arg Ser Cys Leu His Gln Thr Val Gln Gln Phe Lys Arg Phe Ile
    1025   1030   1035

Glu Asn Tyr Arg Arg His Ile Gly Cys Val Ala Val Phe Tyr Ala
    1040   1045   1050

Ile Ala Gly Gly Leu Phe Leu Glu Arg Ala Tyr Tyr Tyr Ala Phe
    1055   1060   1065

Ala Ala His His Thr Gly Ile Thr Asp Thr Thr Arg Val Gly Ile
    1070   1075   1080

Ile Leu Ser Arg Gly Thr Ala Ala Ser Ile Ser Phe Met Phe Ser
    1085   1090   1095

Tyr Ile Leu Leu Thr Met Cys Arg Asn Leu Ile Thr Phe Leu Arg
    1100   1105   1110

Glu Thr Phe Leu Asn Arg Tyr Val Pro Phe Asp Ala Ala Val Asp
    1115   1120   1125

Phe His Arg Leu Ile Ala Ser Thr Ala Ile Val Leu Thr Val Leu
    1130   1135   1140

His Ser Val Gly His Val Val Asn Val Tyr Leu Phe Ser Ile Ser
    1145   1150   1155

Pro Leu Ser Val Leu Ser Cys Leu Phe Pro Gly Leu Phe His Asp
    1160   1165   1170

Asp Gly Ser Glu Leu Pro Gln Lys Tyr Tyr Trp Trp Phe Phe Gln
    1175   1180   1185

Thr Val Pro Gly Leu Thr Gly Val Val Leu Leu Leu Ile Leu Ala
    1190   1195   1200

Ile Met Tyr Val Phe Ala Ser His His Phe Arg Arg Arg Ser Phe
    1205   1210   1215

Arg Gly Phe Trp Leu Thr His His Leu Tyr Ile Leu Leu Tyr Val
    1220   1225   1230

Leu Leu Ile Ile His Gly Ser Phe Ala Leu Ile Gln Leu Pro Arg
    1235   1240   1245

Phe His Ile Phe Phe Leu Val Pro Ala Ile Ile Tyr Gly Gly Asp
    1250   1255   1260

Lys Leu Val Ser Leu Ser Arg Lys Lys Val Glu Ile Ser Val Val
    1265   1270   1275

Lys Ala Glu Leu Leu Pro Ser Gly Val Thr His Leu Arg Phe Gln
    1280   1285   1290

Arg Pro Gln Gly Phe Glu Tyr Lys Ser Gly Gln Trp Val Arg Ile
    1295   1300   1305

Ala Cys Leu Ala Leu Gly Thr Thr Glu Tyr His Pro Phe Thr Leu
    1310   1315   1320

Thr Ser Ala Pro His Glu Asp Thr Leu Ser Leu His Ile Arg Ala
    1325   1330   1335

Ala Gly Pro Trp Thr Thr Arg Leu Arg Glu Ile Tyr Ser Ala Pro
    1340   1345   1350

Thr Gly Asp Arg Cys Ala Arg Tyr Pro Lys Leu Tyr Leu Asp Gly
    1355   1360   1365

Pro Phe Gly Glu Gly His Gln Glu Trp His Lys Phe Glu Val Ser
    1370   1375   1380

Val Leu Val Gly Gly Gly Ile Gly Val Thr Pro Phe Ala Ser Ile
    1385   1390   1395

Leu Lys Asp Leu Val Phe Lys Ser Ser Val Ser Cys Gln Val Phe
    1400   1405   1410

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Cys Lys  Lys Ile Tyr Phe Ile  Trp Val Thr Arg Thr  Gln Arg Gln
    1415                 1420              1425

Phe Glu  Trp Leu Ala Asp Ile  Ile Arg Glu Val Glu  Glu Asn Asp
    1430                 1435              1440

His Gln  Asp Leu Val Ser Val  His Ile Tyr Ile Thr  Gln Leu Ala
    1445                 1450              1455

Glu Lys  Phe Asp Leu Arg Thr  Thr Met Leu Tyr Ile  Cys Glu Arg
    1460                 1465              1470

His Phe  Gln Lys Val Leu Asn  Arg Ser Leu Phe Thr  Gly Leu Arg
    1475                 1480              1485

Ser Ile  Thr His Phe Gly Arg  Pro Pro Phe Glu Pro  Phe Phe Asn
    1490                 1495              1500

Ser Leu  Gln Glu Val His Pro  Gln Val Arg Lys Ile  Gly Val Phe
    1505                 1510              1515

Ser Cys  Gly Pro Pro Gly Met  Thr Lys Asn Val Glu  Lys Ala Cys
    1520                 1525              1530

Gln Leu  Ile Asn Arg Gln Asp  Arg Thr His Phe Ser  His His Tyr
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Glu Asn  Phe
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gtagagcaca gaagcaaaga ttttaagagg aaagaagaca tctgaaccca acaccaccct 180

aaaccacagg ctgcagggtt ggc atg ctc cgt gca aga cca gag gca ctg atg 233
                          Met Leu Arg Ala Arg Pro Glu Ala Leu Met
                      1   5   10

ctc ctg gga gct ctt ctg act gga tcc ctg ggt cca tcg ggc agt cag 281
Leu Leu Gly Ala Leu Leu Thr Gly Ser Leu Gly Pro Ser Gly Ser Gln
              15   20   25

gac gca ctc tca ctg ccc tgg gaa gtg cag cgc tat gac ggc tgg ttt 329
Asp Ala Leu Ser Leu Pro Trp Glu Val Gln Arg Tyr Asp Gly Trp Phe
          30   35   40

aac aac ctg agg cac cac gag cgt ggt gct gtt ggc tgc cgg ttg cag 377
Asn Asn Leu Arg His His Glu Arg Gly Ala Val Gly Cys Arg Leu Gln
        45   50   55

cgc cgc gta cca gcc aat tac gcc gac ggt gtg tat cag gct ctg gag 425
Arg Arg Val Pro Ala Asn Tyr Ala Asp Gly Val Tyr Gln Ala Leu Glu
  60   65   70

gag ccg cag ctg ccc aac ccg cgc cgg ctc agc aac gca gcc acg cgg 473
Glu Pro Gln Leu Pro Asn Pro Arg Arg Leu Ser Asn Ala Ala Thr Arg
75   80   85   90

ggc ata gcc ggc ctg ccg tcg ctc cac aac cgc acc gta ctg ggg gtc 521
Gly Ile Ala Gly Leu Pro Ser Leu His Asn Arg Thr Val Leu Gly Val
              95   100   105

ttc ttt ggc tac cat gtt ctt tcc gac gtg gtg agc gtg gaa acg ccc 569
Phe Phe Gly Tyr His Val Leu Ser Asp Val Val Ser Val Glu Thr Pro
             110   115   120

ggt tgc ccc gcc gag ttc ctc aac atc cgc atc cca cct gga gac ccc 617
Gly Cys Pro Ala Glu Phe Leu Asn Ile Arg Ile Pro Pro Gly Asp Pro
          125   130   135

gtg ttc gac ccc gac cag cgc ggg gac gtg gtg ctg ccc ttc cag agg 665
Val Phe Asp Pro Asp Gln Arg Gly Asp Val Val Leu Pro Phe Gln Arg
     140   145   150

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agc cgc tgg gac ccc gag acc gga cgg agt ccc agc aac ccc cgg gac          713
Ser Arg Trp Asp Pro Glu Thr Gly Arg Ser Pro Ser Asn Pro Arg Asp
155                 160                 165                 170


ctg gcc aac cag gtg acg ggc tgg ctg gac ggc agc gcc atc tat ggc          761
Leu Ala Asn Gln Val Thr Gly Trp Leu Asp Gly Ser Ala Ile Tyr Gly
                    175                 180                 185


tcc tcg cac tcc tgg agc gac gcg ctg cgg agc ttc tcg ggg gga cag          809
Ser Ser His Ser Trp Ser Asp Ala Leu Arg Ser Phe Ser Gly Gly Gln
                190                 195                 200


ctg gcg tcg ggg ccc gac ccc gct ttc ccc cga gac tcg cag aac ccc          857
Leu Ala Ser Gly Pro Asp Pro Ala Phe Pro Arg Asp Ser Gln Asn Pro
            205                 210                 215


ctg ctc atg tgg gcg gcg ccc gac ccc gcc acc ggg cag aac ggg ccc          905
Leu Leu Met Trp Ala Ala Pro Asp Pro Ala Thr Gly Gln Asn Gly Pro
            220                 225                 230


cgg ggg ctg tac gcc ttc ggg gca gag aga ggg aac cgg gaa ccc ttc          953
Arg Gly Leu Tyr Ala Phe Gly Ala Glu Arg Gly Asn Arg Glu Pro Phe
235                 240                 245                 250


ctg cag gcg ctg ggc ctg ctc tgg ttc cgc tac cac aac ctg tgg gcg          1001
Leu Gln Ala Leu Gly Leu Leu Trp Phe Arg Tyr His Asn Leu Trp Ala
                255                 260                 265


cag agg ctg gcc cgc cag cac cca gac tgg gag gac gag gag ctg ttc          1049
Gln Arg Leu Ala Arg Gln His Pro Asp Trp Glu Asp Glu Glu Leu Phe
                270                 275                 280


cag cac gca cgc aag agg gtc atc gcc acc tac cag aac atc gct gtg          1097
Gln His Ala Arg Lys Arg Val Ile Ala Thr Tyr Gln Asn Ile Ala Val
            285                 290                 295


tat gag tgg ctg ccc agc ttc ctg cag aaa aca ctc ccg gag tat aca          1145
Tyr Glu Trp Leu Pro Ser Phe Leu Gln Lys Thr Leu Pro Glu Tyr Thr
            300                 305                 310


gga tac cgt cct ttc cta gac ccc agc atc tcc ccg gaa ttt gtg gtg          1193
Gly Tyr Arg Pro Phe Leu Asp Pro Ser Ile Ser Pro Glu Phe Val Val
315                 320                 325                 330


gcc tct gag cag ttc ttc tct acc atg gtg ccc cct ggt gtc tac atg          1241
Ala Ser Glu Gln Phe Phe Ser Thr Met Val Pro Pro Gly Val Tyr Met
                335                 340                 345


aga aat gcc agc tgt cat ttc cgg aag gtc ctg aac aag ggt ttt caa          1289
Arg Asn Ala Ser Cys His Phe Arg Lys Val Leu Asn Lys Gly Phe Gln
            350                 355                 360


agc tcc caa gct ctc agg gtc tgc aac aac tac tgg att cgg gag aac          1337
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Ser Ser Gln Ala Leu Arg Val Cys Asn Asn Tyr Trp Ile Arg Glu Asn
        365   370   375

ccc aat ctg aac agt acc cag gag gtg aat gag ctg ctg ctg gga atg   1385
Pro Asn Leu Asn Ser Thr Gln Glu Val Asn Glu Leu Leu Leu Gly Met
        380   385   390

gcc tcc cag att tcg gag ttg gag gac aac ata gtg gtt gaa gat ctg   1433
Ala Ser Gln Ile Ser Glu Leu Glu Asp Asn Ile Val Val Glu Asp Leu
395   400   405   410

agg gat tac tgg cct ggc cct ggc aaa ttc tcc cgt aca gac tat gtg   1481
Arg Asp Tyr Trp Pro Gly Pro Gly Lys Phe Ser Arg Thr Asp Tyr Val
                415   420   425

gcc agc agc atc caa cgt ggc cga gat atg ggg ctg ccc agc tat agc   1529
Ala Ser Ser Ile Gln Arg Gly Arg Asp Met Gly Leu Pro Ser Tyr Ser
                430   435   440

cag gcc ctg ctg gcc ttt ggg ctg gac atc cca agg aac tgg agt gat   1577
Gln Ala Leu Leu Ala Phe Gly Leu Asp Ile Pro Arg Asn Trp Ser Asp
        445   450   455

ctc aac cct aat gtg gac ccc cag gtg ctg gag gcc aca gct gcc ctg   1625
Leu Asn Pro Asn Val Asp Pro Gln Val Leu Glu Ala Thr Ala Ala Leu
        460   465   470

tac aac cag gac cta tcc cag cta gag ctg ctc ctt ggg ggg ctc ctg   1673
Tyr Asn Gln Asp Leu Ser Gln Leu Glu Leu Leu Leu Gly Gly Leu Leu
475   480   485   490

gag agc cat ggg gac cct gga ccc ctg ttc agt gcc att gtc ctc gac   1721
Glu Ser His Gly Asp Pro Gly Pro Leu Phe Ser Ala Ile Val Leu Asp
                495   500   505

cag ttt gta cgg ctg cgg gat ggt gac cgc tac tgg ttt gag aac acc   1769
Gln Phe Val Arg Leu Arg Asp Gly Asp Arg Tyr Trp Phe Glu Asn Thr
                510   515   520

agg aat ggg ctg ttc tcc aag aag gag att gaa gac atc cga aat acc   1817
Arg Asn Gly Leu Phe Ser Lys Lys Glu Ile Glu Asp Ile Arg Asn Thr
                525   530   535

acc ctg cgg gac gtg ctg gtc gct gtt atc aac att gac ccc agt gcc   1865
Thr Leu Arg Asp Val Leu Val Ala Val Ile Asn Ile Asp Pro Ser Ala
        540   545   550

ctg cag ccc aat gtc ttt gtc tgg cat aaa ggt gca ccc tgc cct caa   1913
Leu Gln Pro Asn Val Phe Val Trp His Lys Gly Ala Pro Cys Pro Gln
555   560   565   570

cct aag cag ctc aca act gac ggc ctg ccc cag tgt gca ccc ctg act   1961
Pro Lys Gln Leu Thr Thr Asp Gly Leu Pro Gln Cys Ala Pro Leu Thr
                575   580   585

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gtg ctt gac ttc ttt gaa ggc agc agc cct ggt ttt gcc atc acc atc   2009
Val Leu Asp Phe Phe Glu Gly Ser Ser Pro Gly Phe Ala Ile Thr Ile
        590                 595                 600

att gct ctc tgc tgc ctt ccc tta gtg agt ctg ctt ctc tct gga gtg   2057
Ile Ala Leu Cys Cys Leu Pro Leu Val Ser Leu Leu Leu Ser Gly Val
        605                 610                 615

gtg gcc tat ttc cgg ggc cga gaa cac aag aag cta caa aag aaa ctc   2105
Val Ala Tyr Phe Arg Gly Arg Glu His Lys Lys Leu Gln Lys Lys Leu
        620                 625                 630

aaa gag agc gtg aag aag gaa gca gcc aaa gat gga gtg cca gcg atg   2153
Lys Glu Ser Val Lys Lys Glu Ala Ala Lys Asp Gly Val Pro Ala Met
635                 640                 645                 650

gag tgg cca ggc ccc aag gag agg agc agt ccc atc atc atc cag ctg   2201
Glu Trp Pro Gly Pro Lys Glu Arg Ser Ser Pro Ile Ile Ile Gln Leu
                655                 660                 665

ctg tca gac agg tgt ctg cag gtc ctg aac agg cat ctc act gtg ctc   2249
Leu Ser Asp Arg Cys Leu Gln Val Leu Asn Arg His Leu Thr Val Leu
                670                 675                 680

cgt gtg gtc cag ctg cag cct ctg cag cag gtc aac ctc atc ctg tcc   2297
Arg Val Val Gln Leu Gln Pro Leu Gln Gln Val Asn Leu Ile Leu Ser
            685                 690                 695

aac aac cga gga tgc cgc acc ctg ctg ctc aag atc cct aag gag tat   2345
Asn Asn Arg Gly Cys Arg Thr Leu Leu Leu Lys Ile Pro Lys Glu Tyr
    700                 705                 710

gac ctg gtg ctg ctg ttt agt tct gaa gag gaa cgg ggc gcc ttt gtg   2393
Asp Leu Val Leu Leu Phe Ser Ser Glu Glu Glu Arg Gly Ala Phe Val
715                 720                 725                 730

cag cag cta tgg gac ttc tgc gtg cgc tgg gct ctg ggc ctc cat gtg   2441
Gln Gln Leu Trp Asp Phe Cys Val Arg Trp Ala Leu Gly Leu His Val
                735                 740                 745

gct gag atg agc gag aag gag cta ttt agg aag gct gtg aca aag cag   2489
Ala Glu Met Ser Glu Lys Glu Leu Phe Arg Lys Ala Val Thr Lys Gln
                750                 755                 760

cag cgg gaa cgc atc ctg gag atc ttc ttc aga cac ctt ttt gct cag   2537
Gln Arg Glu Arg Ile Leu Glu Ile Phe Phe Arg His Leu Phe Ala Gln
        765                 770                 775

gtg ctg gac atc aac cag gcc gac gca ggg acc ctg ccc ctg gac tcc   2585
Val Leu Asp Ile Asn Gln Ala Asp Ala Gly Thr Leu Pro Leu Asp Ser
        780                 785                 790

tcc cag aag gtg cgg gag gcc ctg acc tgc gag ctg agc agg gcc gag   2633
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Ser Gln Lys Val Arg Glu Ala Leu Thr Cys Glu Leu Ser Arg Ala Glu
795                 800                 805                 810

ttt gcc gag tcc ctg ggc ctc aag ccc cag gac atg ttt gtg gag tcc    2681
Phe Ala Glu Ser Leu Gly Leu Lys Pro Gln Asp Met Phe Val Glu Ser
                815                 820                 825

atg ttc tct ctg gct gac aag gat ggc aat ggc tac ctg tcc ttc cga    2729
Met Phe Ser Leu Ala Asp Lys Asp Gly Asn Gly Tyr Leu Ser Phe Arg
                830                 835                 840

gag ttc ctg gac atc ctg gtg gtc ttc atg aaa ggc tcc cca gag gat    2777
Glu Phe Leu Asp Ile Leu Val Val Phe Met Lys Gly Ser Pro Glu Asp
            845                 850                 855

aag tcc cgt cta atg ttt acc atg tat gac ctg gat gag aat ggc ttc    2825
Lys Ser Arg Leu Met Phe Thr Met Tyr Asp Leu Asp Glu Asn Gly Phe
        860                 865                 870

ctc tcc aag gac gaa ttc ttc acc atg atg cga tcc ttc atc gag atc    2873
Leu Ser Lys Asp Glu Phe Phe Thr Met Met Arg Ser Phe Ile Glu Ile
875                 880                 885                 890

tcc aac aac tgc ctg tcc aag gcc cag ctg gcc gag gtg gtg gag tct    2921
Ser Asn Asn Cys Leu Ser Lys Ala Gln Leu Ala Glu Val Val Glu Ser
                895                 900                 905

atg ttc cgg gag tcg gga ttc cag gac aag gag gag ctg aca tgg gag    2969
Met Phe Arg Glu Ser Gly Phe Gln Asp Lys Glu Glu Leu Thr Trp Glu
                910                 915                 920

gat ttt cac ttc atg ctg cgg gac cat gac agc gag ctc cgc ttc acg    3017
Asp Phe His Phe Met Leu Arg Asp His Asp Ser Glu Leu Arg Phe Thr
            925                 930                 935

cag ctc tgt gtc aaa ggt gga ggt gga ggt gga aat ggt att aga gat    3065
Gln Leu Cys Val Lys Gly Gly Gly Gly Gly Gly Asn Gly Ile Arg Asp
        940                 945                 950

atc ttt aaa caa aac atc agc tgt cga gtc tcg ttc atc act cgg aca    3113
Ile Phe Lys Gln Asn Ile Ser Cys Arg Val Ser Phe Ile Thr Arg Thr
955                 960                 965                 970

cct ggg gag cgc tcc cac ccc cag gga ctg ggg ccc cct gcc cca gaa    3161
Pro Gly Glu Arg Ser His Pro Gln Gly Leu Gly Pro Pro Ala Pro Glu
                975                 980                 985

gcc cca gag ctg gga ggc cct gga ctg aag aag agg ttt ggc aaa aag    3209
Ala Pro Glu Leu Gly Gly Pro Gly Leu Lys Lys Arg Phe Gly Lys Lys
            990                 995                 1000

gca gca gtg ccc act ccc cgg ctg tac aca gag gcg ctg caa gag        3254
Ala Ala Val Pro Thr Pro Arg Leu Tyr Thr Glu Ala Leu Gln Glu
        1005                1010                1015
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aag atg cag  cga ggc ttc cta gcc  caa aag ctg cag cag  tac aag      3299
Lys Met Gln  Arg Gly Phe Leu Ala  Gln Lys Leu Gln Gln  Tyr Lys
        1020                 1025                 1030

cgc ttc gtg  gag aac tac cgg agg  cac atc gtg tgt gtg  gca atc      3344
Arg Phe Val  Glu Asn Tyr Arg Arg  His Ile Val Cys Val  Ala Ile
        1035                 1040                 1045

ttc tcg gcc  atc tgt gtt ggc gtg  ttt gca gat cgt gct  tac tac      3389
Phe Ser Ala  Ile Cys Val Gly Val  Phe Ala Asp Arg Ala  Tyr Tyr
        1050                 1055                 1060

tat ggc ttt  gcc tcg cca ccc tcg  gac att gca cag acc  acc ctc      3434
Tyr Gly Phe  Ala Ser Pro Pro Ser  Asp Ile Ala Gln Thr  Thr Leu
        1065                 1070                 1075

gtg ggc atc  atc ctg tca cga ggc  acg gcg gcc agc gtc  tcc ttc      3479
Val Gly Ile  Ile Leu Ser Arg Gly  Thr Ala Ala Ser Val  Ser Phe
        1080                 1085                 1090

atg ttc tct  tat atc ttg ctc acc  atg tgc cgc aac ctc  ata acc      3524
Met Phe Ser  Tyr Ile Leu Leu Thr  Met Cys Arg Asn Leu  Ile Thr
        1095                 1100                 1105

ttc ctg cga  gag act ttc ctc aac  cgc tat gtg cct ttt  gat gcc      3569
Phe Leu Arg  Glu Thr Phe Leu Asn  Arg Tyr Val Pro Phe  Asp Ala
        1110                 1115                 1120

gca gtg gac  ttc cac cgc tgg atc  gcc atg gct gct gtt  gtc ctg      3614
Ala Val Asp  Phe His Arg Trp Ile  Ala Met Ala Ala Val  Val Leu
        1125                 1130                 1135

gcc att ttg  cac agt gct ggc cac  gca gtc aat gtc tac  atc ttc      3659
Ala Ile Leu  His Ser Ala Gly His  Ala Val Asn Val Tyr  Ile Phe
        1140                 1145                 1150

tca gtc agc  cca ctc agc ctg ctg  gcc tgc ata ttc ccc  aac gtc      3704
Ser Val Ser  Pro Leu Ser Leu Leu  Ala Cys Ile Phe Pro  Asn Val
        1155                 1160                 1165

ttt gtg aat  gat ggg tcc aag ctt  ccc cag aag ttc tat  tgg tgg      3749
Phe Val Asn  Asp Gly Ser Lys Leu  Pro Gln Lys Phe Tyr  Trp Trp
        1170                 1175                 1180

ttc ttc cag  acc gtc cca ggt atg  aca ggt gtg ctt ctg  ctc ctg      3794
Phe Phe Gln  Thr Val Pro Gly Met  Thr Gly Val Leu Leu  Leu Leu
        1185                 1190                 1195

gtc ctg gcc  atc atg tat gtc ttc  gcc tcc cac cac ttc  cgc cgc      3839
Val Leu Ala  Ile Met Tyr Val Phe  Ala Ser His His Phe  Arg Arg
        1200                 1205                 1210

cgc agc ttc  cgg ggc ttc tgg ctg  acc cac cac ctc tac  atc ctg      3884
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Arg Ser Phe  Arg Gly Phe Trp Leu  Thr His His Leu Tyr  Ile Leu
    1215                 1220                 1225

ctc tat gcc  ctg ctc atc atc cat  ggc agc tat gct ctg  atc cag      3929
Leu Tyr Ala  Leu Leu Ile Ile His  Gly Ser Tyr Ala Leu  Ile Gln
    1230                 1235                 1240

ctg ccc act  ttc cac atc tac ttc  ctg gtc ccg gca atc  atc tat      3974
Leu Pro Thr  Phe His Ile Tyr Phe  Leu Val Pro Ala Ile  Ile Tyr
    1245                 1250                 1255

gga ggt gac  aag ctg gtg agc ctg  agc cgg aag aag gtg  gag atc      4019
Gly Gly Asp  Lys Leu Val Ser Leu  Ser Arg Lys Lys Val  Glu Ile
    1260                 1265                 1270

agc gtg gtg  aag gcg gag ctg ctg  ccc tca gga gtg acc  tac ctg      4064
Ser Val Val  Lys Ala Glu Leu Leu  Pro Ser Gly Val Thr  Tyr Leu
    1275                 1280                 1285

caa ttc cag  agg ccc caa ggc ttt  gag tac aag tca gga  cag tgg      4109
Gln Phe Gln  Arg Pro Gln Gly Phe  Glu Tyr Lys Ser Gly  Gln Trp
    1290                 1295                 1300

gtg cgg atc  gcc tgc ctg gct ctg  ggg acc acc gag tac  cac ccc      4154
Val Arg Ile  Ala Cys Leu Ala Leu  Gly Thr Thr Glu Tyr  His Pro
    1305                 1310                 1315

ttc aca ctg  acc tcc gcg ccc cat  gag gac aca ctc agc  ctg cac      4199
Phe Thr Leu  Thr Ser Ala Pro His  Glu Asp Thr Leu Ser  Leu His
    1320                 1325                 1330

atc cgg gca  gtg ggg ccc tgg acc  act cgc ctc agg gag  atc tac      4244
Ile Arg Ala  Val Gly Pro Trp Thr  Thr Arg Leu Arg Glu  Ile Tyr
    1335                 1340                 1345

tca tcc cca  aag ggc aat ggc tgt  gct gga tac cca aag  ctg tac      4289
Ser Ser Pro  Lys Gly Asn Gly Cys  Ala Gly Tyr Pro Lys  Leu Tyr
    1350                 1355                 1360

ctt gat gga  ccg ttt gga gag ggc  cat cag gag tgg cat  aaa ttt      4334
Leu Asp Gly  Pro Phe Gly Glu Gly  His Gln Glu Trp His  Lys Phe
    1365                 1370                 1375

gag gtg tca  gtg ttg gtg gga ggg  ggc att ggg gtc acc  ccc ttt      4379
Glu Val Ser  Val Leu Val Gly Gly  Gly Ile Gly Val Thr  Pro Phe
    1380                 1385                 1390

gcc tcc atc  ctc aaa gac ctg gtc  ttc aag tca tcc ttg  ggc agc      4424
Ala Ser Ile  Leu Lys Asp Leu Val  Phe Lys Ser Ser Leu  Gly Ser
    1395                 1400                 1405

caa atg ctg  tgt aag aag atc tac  ttc atc tgg gtg aca  cgg acc      4469
Gln Met Leu  Cys Lys Lys Ile Tyr  Phe Ile Trp Val Thr  Arg Thr
    1410                 1415                 1420
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cag cgt cag  ttt gag tgg ctg gct  gac atc atc caa gag  gtg gag       4514
Gln Arg Gln  Phe Glu Trp Leu Ala  Asp Ile Ile Gln Glu  Val Glu
        1425                  1430                  1435

gag aac gac  cac cag gac ctg gtg  tct gtg cac att tat  gtc acc       4559
Glu Asn Asp  His Gln Asp Leu Val  Ser Val His Ile Tyr  Val Thr
        1440                  1445                  1450

cag ctg gct  gag aag ttc gac ctc  agg acc acc atg cta  tac atc       4604
Gln Leu Ala  Glu Lys Phe Asp Leu  Arg Thr Thr Met Leu  Tyr Ile
        1455                  1460                  1465

tgc gag cgg  cac ttc cag aaa gtg  ctg aac cgg agt ctg  ttc acg       4649
Cys Glu Arg  His Phe Gln Lys Val  Leu Asn Arg Ser Leu  Phe Thr
        1470                  1475                  1480

ggc ctg cgc  tcc atc acc cac ttt  ggc cgt ccc ccc ttc  gag ccc       4694
Gly Leu Arg  Ser Ile Thr His Phe  Gly Arg Pro Pro Phe  Glu Pro
        1485                  1490                  1495

ttc ttc aac  tcc ctg cag gag gtc  cac cca cag gtg cgc  aag atc       4739
Phe Phe Asn  Ser Leu Gln Glu Val  His Pro Gln Val Arg  Lys Ile
        1500                  1505                  1510

ggg gtg ttc  agc tgc ggc cct cca  gga atg acc aag aat  gta gag       4784
Gly Val Phe  Ser Cys Gly Pro Pro  Gly Met Thr Lys Asn  Val Glu
        1515                  1520                  1525

aag gcc tgt  cag ctc gtc aac agg  cag gac cga gcc cac  ttc atg       4829
Lys Ala Cys  Gln Leu Val Asn Arg  Gln Asp Arg Ala His  Phe Met
        1530                  1535                  1540

cac cac tat  gag aac ttc tga gcctgtcctc cctggctgct gcttccagta        4880
His His Tyr  Glu Asn Phe
        1545

tcctgccttc tcttctgtgc acctaagttg cccagccctg ctggcaatct ctccatcaga   4940

atccacctta ggcctcagct ggagggctgc agagcccctc ccaatattgg gagaatattg   5000

acccagacaa ttatacaaat gagaaaaggc aggagactat gttctacaat tgcagtgcat   5060

gatgattata agtccacctg tttatcaacg gcaccattcc tgcagccctc cagacttcct   5120

gcccttagca agtgcgcaac cagtcaggat ctcccaaaga agataaagac cactcctcac   5180

cccagctcaa gccatggcag gcgtggcaag caaagtgggg aggagacagt ccctgcttgt   5240

gacaagtgtg gaggtgaaaa ggtacaatag tgcttgtctc cgatagctcc ccacatctct   5300

aattgacttc cacaaaatcg atgcgttgct ttggtatttg cttggactga catttgaggg   5360

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gagggcacca ggaaacaaag atgcctcccc agccctgata ttcttgatgt caccagtgat   5600

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<211> 1548

<212> PRT

<213> Homo sapiens

<400> 14

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Met Leu Arg Ala Arg Pro Glu Ala Leu Met Leu Leu Gly Ala Leu Leu
1               5                   10                  15


Thr Gly Ser Leu Gly Pro Ser Gly Ser Gln Asp Ala Leu Ser Leu Pro
            20                  25                  30
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Trp Glu Val Gln Arg Tyr Asp Gly Trp Phe Asn Asn Leu Arg His His
    35   40   45

Glu Arg Gly Ala Val Gly Cys Arg Leu Gln Arg Arg Val Pro Ala Asn
    50   55   60

Tyr Ala Asp Gly Val Tyr Gln Ala Leu Glu Glu Pro Gln Leu Pro Asn
65   70   75   80

Pro Arg Arg Leu Ser Asn Ala Ala Thr Arg Gly Ile Ala Gly Leu Pro
            85   90   95

Ser Leu His Asn Arg Thr Val Leu Gly Val Phe Phe Gly Tyr His Val
            100   105   110

Leu Ser Asp Val Val Ser Val Glu Thr Pro Gly Cys Pro Ala Glu Phe
    115   120   125

Leu Asn Ile Arg Ile Pro Pro Gly Asp Pro Val Phe Asp Pro Asp Gln
    130   135   140

Arg Gly Asp Val Val Leu Pro Phe Gln Arg Ser Arg Trp Asp Pro Glu
145   150   155   160

Thr Gly Arg Ser Pro Ser Asn Pro Arg Asp Leu Ala Asn Gln Val Thr
                165   170   175

Gly Trp Leu Asp Gly Ser Ala Ile Tyr Gly Ser Ser His Ser Trp Ser
            180   185   190

Asp Ala Leu Arg Ser Phe Ser Gly Gly Gln Leu Ala Ser Gly Pro Asp
    195   200   205

Pro Ala Phe Pro Arg Asp Ser Gln Asn Pro Leu Leu Met Trp Ala Ala
    210   215   220

Pro Asp Pro Ala Thr Gly Gln Asn Gly Pro Arg Gly Leu Tyr Ala Phe
225   230   235   240

Gly Ala Glu Arg Gly Asn Arg Glu Pro Phe Leu Gln Ala Leu Gly Leu
            245   250   255

Leu Trp Phe Arg Tyr His Asn Leu Trp Ala Gln Arg Leu Ala Arg Gln
            260   265   270

His Pro Asp Trp Glu Asp Glu Glu Leu Phe Gln His Ala Arg Lys Arg
            275   280   285

Val Ile Ala Thr Tyr Gln Asn Ile Ala Val Tyr Glu Trp Leu Pro Ser
    290   295   300

Phe Leu Gln Lys Thr Leu Pro Glu Tyr Thr Gly Tyr Arg Pro Phe Leu
305   310   315   320

Asp Pro Ser Ile Ser Pro Glu Phe Val Val Ala Ser Glu Gln Phe Phe
                325   330   335

Ser Thr Met Val Pro Pro Gly Val Tyr Met Arg Asn Ala Ser Cys His
            340   345   350

Phe Arg Lys Val Leu Asn Lys Gly Phe Gln Ser Ser Gln Ala Leu Arg
        355   360   365

Val Cys Asn Asn Tyr Trp Ile Arg Glu Asn Pro Asn Leu Asn Ser Thr
    370   375   380

Gln Glu Val Asn Glu Leu Leu Leu Gly Met Ala Ser Gln Ile Ser Glu
385   390   395   400

Leu Glu Asp Asn Ile Val Val Glu Asp Leu Arg Asp Tyr Trp Pro Gly
                405   410   415

Pro Gly Lys Phe Ser Arg Thr Asp Tyr Val Ala Ser Ser Ile Gln Arg
            420   425   430

Gly Arg Asp Met Gly Leu Pro Ser Tyr Ser Gln Ala Leu Leu Ala Phe
            435   440   445

Gly Leu Asp Ile Pro Arg Asn Trp Ser Asp Leu Asn Pro Asn Val Asp
    450   455   460

Pro Gln Val Leu Glu Ala Thr Ala Ala Leu Tyr Asn Gln Asp Leu Ser
465   470   475   480

Gln Leu Glu Leu Leu Leu Gly Gly Leu Leu Glu Ser His Gly Asp Pro
            485   490   495

Gly Pro Leu Phe Ser Ala Ile Val Leu Asp Gln Phe Val Arg Leu Arg
            500   505   510

Asp Gly Asp Arg Tyr Trp Phe Glu Asn Thr Arg Asn Gly Leu Phe Ser
            515   520   525

Lys Lys Glu Ile Glu Asp Ile Arg Asn Thr Thr Leu Arg Asp Val Leu
        530   535   540

Val Ala Val Ile Asn Ile Asp Pro Ser Ala Leu Gln Pro Asn Val Phe
545   550   555   560

Val Trp His Lys Gly Ala Pro Cys Pro Gln Pro Lys Gln Leu Thr Thr
                565   570   575

Asp Gly Leu Pro Gln Cys Ala Pro Leu Thr Val Leu Asp Phe Phe Glu
            580   585   590

Gly Ser Ser Pro Gly Phe Ala Ile Thr Ile Ile Ala Leu Cys Cys Leu
            595   600   605

Pro Leu Val Ser Leu Leu Leu Ser Gly Val Val Ala Tyr Phe Arg Gly
    610   615   620

Arg Glu His Lys Lys Leu Gln Lys Lys Leu Lys Glu Ser Val Lys Lys
625   630   635   640

Glu Ala Ala Lys Asp Gly Val Pro Ala Met Glu Trp Pro Gly Pro Lys
            645   650   655

Glu Arg Ser Ser Pro Ile Ile Ile Gln Leu Leu Ser Asp Arg Cys Leu
            660   665   670

Gln Val Leu Asn Arg His Leu Thr Val Leu Arg Val Val Gln Leu Gln
    675   680   685

Pro Leu Gln Gln Val Asn Leu Ile Leu Ser Asn Asn Arg Gly Cys Arg
    690   695   700

Thr Leu Leu Leu Lys Ile Pro Lys Glu Tyr Asp Leu Val Leu Leu Phe
705   710   715   720

Ser Ser Glu Glu Glu Arg Gly Ala Phe Val Gln Gln Leu Trp Asp Phe
            725   730   735

Cys Val Arg Trp Ala Leu Gly Leu His Val Ala Glu Met Ser Glu Lys
            740   745   750

Glu Leu Phe Arg Lys Ala Val Thr Lys Gln Gln Arg Glu Arg Ile Leu
        755   760   765

Glu Ile Phe Phe Arg His Leu Phe Ala Gln Val Leu Asp Ile Asn Gln
    770   775   780

Ala Asp Ala Gly Thr Leu Pro Leu Asp Ser Ser Gln Lys Val Arg Glu
785   790   795   800

Ala Leu Thr Cys Glu Leu Ser Arg Ala Glu Phe Ala Glu Ser Leu Gly
            805   810   815

Leu Lys Pro Gln Asp Met Phe Val Glu Ser Met Phe Ser Leu Ala Asp
            820   825   830

Lys Asp Gly Asn Gly Tyr Leu Ser Phe Arg Glu Phe Leu Asp Ile Leu
        835   840   845

Val Val Phe Met Lys Gly Ser Pro Glu Asp Lys Ser Arg Leu Met Phe
    850   855   860

Thr Met Tyr Asp Leu Asp Glu Asn Gly Phe Leu Ser Lys Asp Glu Phe
865   870   875   880

Phe Thr Met Met Arg Ser Phe Ile Glu Ile Ser Asn Asn Cys Leu Ser
            885   890   895

Lys Ala Gln Leu Ala Glu Val Val Glu Ser Met Phe Arg Glu Ser Gly
　　　 900　　　　　　　　 905　　　　　　　 910

Phe Gln Asp Lys Glu Glu Leu Thr Trp Glu Asp Phe His Phe Met Leu
　　　 915　　　　　　　 920　　　　　　　 925

Arg Asp His Asp Ser Glu Leu Arg Phe Thr Gln Leu Cys Val Lys Gly
　 930　　　　　　　 935　　　　　　　 940

Gly Gly Gly Gly Gly Asn Gly Ile Arg Asp Ile Phe Lys Gln Asn Ile
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Ser Cys Arg Val Ser Phe Ile Thr Arg Thr Pro Gly Glu Arg Ser His
　　　　　 965　　　　　　　 970　　　　　　 975

Pro Gln Gly Leu Gly Pro Pro Ala Pro Glu Ala Pro Glu Leu Gly Gly
　　　　 980　　　　　　 985　　　　　　 990

Pro Gly Leu Lys Lys Arg Phe Gly　Lys Lys Ala Ala Val　Pro Thr Pro
　　　 995　　　　　　 1000　　　　　 1005

Arg Leu　Tyr Thr Glu Ala Leu　Gln Glu Lys Met Gln　Arg Gly Phe
　 1010　　　　　　　 1015　　　　　　 1020

Leu Ala　Gln Lys Leu Gln Gln　Tyr Lys Arg Phe Val　Glu Asn Tyr
　 1025　　　　　　 1030　　　　　　 1035

Arg Arg　His Ile Val Cys Val　Ala Ile Phe Ser Ala　Ile Cys Val
　 1040　　　　　　 1045　　　　　　 1050

Gly Val　Phe Ala Asp Arg Ala　Tyr Tyr Tyr Gly Phe　Ala Ser Pro
　 1055　　　　　　 1060　　　　　　 1065

Pro Ser　Asp Ile Ala Gln Thr　Thr Leu Val Gly Ile　Ile Leu Ser
　 1070　　　　　　 1075　　　　　　 1080

Arg Gly　Thr Ala Ala Ser Val　Ser Phe Met Phe Ser　Tyr Ile Leu
　 1085　　　　　　 1090　　　　　　 1095

Leu Thr　Met Cys Arg Asn Leu　Ile Thr Phe Leu Arg　Glu Thr Phe
　 1100　　　　　　 1105　　　　　　 1110

Leu Asn Arg Tyr Val Pro Phe Asp Ala Ala Val Asp Phe His Arg
1115   1120   1125

Trp Ile Ala Met Ala Ala Val Val Leu Ala Ile Leu His Ser Ala
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Gly His Ala Val Asn Val Tyr Ile Phe Ser Val Ser Pro Leu Ser
1145   1150   1155

Leu Leu Ala Cys Ile Phe Pro Asn Val Phe Val Asn Asp Gly Ser
1160   1165   1170

Lys Leu Pro Gln Lys Phe Tyr Trp Trp Phe Phe Gln Thr Val Pro
1175   1180   1185

Gly Met Thr Gly Val Leu Leu Leu Leu Val Leu Ala Ile Met Tyr
1190   1195   1200

Val Phe Ala Ser His His Phe Arg Arg Arg Ser Phe Arg Gly Phe
1205   1210   1215

Trp Leu Thr His His Leu Tyr Ile Leu Leu Tyr Ala Leu Leu Ile
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Ile His Gly Ser Tyr Ala Leu Ile Gln Leu Pro Thr Phe His Ile
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Tyr Phe Leu Val Pro Ala Ile Ile Tyr Gly Gly Asp Lys Leu Val
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Ser Leu Ser Arg Lys Lys Val Glu Ile Ser Val Val Lys Ala Glu
1265   1270   1275

Leu Leu Pro Ser Gly Val Thr Tyr Leu Gln Phe Gln Arg Pro Gln
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Gly Phe Glu Tyr Lys Ser Gly Gln Trp Val Arg Ile Ala Cys Leu
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Ala Leu Gly Thr Thr Glu Tyr His Pro Phe Thr Leu Thr Ser Ala
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Pro His Glu Asp Thr Leu Ser Leu His Ile Arg Ala Val Gly Pro
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Trp Thr Thr Arg Leu Arg Glu Ile Tyr Ser Ser Pro Lys Gly Asn
    1340   1345   1350

Gly Cys Ala Gly Tyr Pro Lys Leu Tyr Leu Asp Gly Pro Phe Gly
    1355   1360   1365

Glu Gly His Gln Glu Trp His Lys Phe Glu Val Ser Val Leu Val
    1370   1375   1380

Gly Gly Gly Ile Gly Val Thr Pro Phe Ala Ser Ile Leu Lys Asp
    1385   1390   1395

Leu Val Phe Lys Ser Ser Leu Gly Ser Gln Met Leu Cys Lys Lys
    1400   1405   1410

Ile Tyr Phe Ile Trp Val Thr Arg Thr Gln Arg Gln Phe Glu Trp
    1415   1420   1425

Leu Ala Asp Ile Ile Gln Glu Val Glu Glu Asn Asp His Gln Asp
    1430   1435   1440

Leu Val Ser Val His Ile Tyr Val Thr Gln Leu Ala Glu Lys Phe
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Asp Leu Arg Thr Thr Met Leu Tyr Ile Cys Glu Arg His Phe Gln
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Lys Val Leu Asn Arg Ser Leu Phe Thr Gly Leu Arg Ser Ile Thr
    1475   1480   1485

His Phe Gly Arg Pro Pro Phe Glu Pro Phe Phe Asn Ser Leu Gln
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Glu Val His Pro Gln Val Arg Lys Ile Gly Val Phe Ser Cys Gly
    1505   1510   1515

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Pro Pro  Gly Met Thr Lys Asn  Val Glu Lys Ala Cys  Gln Leu Val
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gttaattgcc cctcaatctc tctcctggaa tggcatcctt ttactttgac ctctgctcca     180

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gtcaccccct ttgcttctat cttgaaatcc atctggtaca aattccagtg tgcagaccac     420

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